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MILITARY AFFAIRS

(FOUO 9/81)

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USSR REPORT
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MILITARY-POLITICAL ISSUES

ECONOMIC PRINCIPLES FOR MILITARY DEFENSE

Moscow EKONOMICHESKIYE OSNOVY OBORONNOGO MOGUSHCHESTVA SOTSIALISTICHESKOGO GOSUDARSTVA in Russian 1981 (Signed to press 20 Nov 80) pp 1-4, 166-192

[Brief description, table of contents, author's foreword and Chapter 4 from book "Economic Principles for the Defensive Might of a Socialist State", by Aleksandr Ivanovich Pozharov, Voenizdat, 25,000 copies, 192 pages. Passages in slantlines written in boldface.]

[Excerpts] Brief Description

On the basis of the Marxist-Leninist thesis on the interrelationship of war and economics, the book examines the origin, essence, historical phases of development and forms of military economics. After explaining the basic directions of economic support to defense under present-day conditions, the author analyzes ways of strengthening military-economic potential, features for implementing it and issues on the effectiveness of military economics.

The book is intended for officers, generals and other readers studying military economics.

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Author's Foreword

The developed socialist society built in our country is a supreme achievement of social progress and a natural stage along the path to communism. In a world where aggressive reactionary forces still are preserved we need a reliable and effective defense of revolutionary achievements. This is one of the most important functions of the socialist state and a matter for all the people.

A country's defensive capability rests on its economic capacities, since "nothing depends so much on economic conditions as the Army and Navy."¹ The scientific-technical revolution extremely reinforced the interconnection and interdependence of war and the economy. Fundamental changes occurred in the nature of possible warfare and throughout military organizational development. At the same time there was an extraordinary strengthening of reverse influence on the economy by measures involving economic support of armed forces. By virtue of this, economic substantiation of military policy and of every concrete step in national defense acquired especially great importance.

In order to achieve the assigned goals with fewest costs (and herein specifically is the meaning of economic substantiation), one has to know the economics of a specific sphere of activity and, to master it, one needs above all general military-economic knowledge. "...Whoever takes up specific issues without first resolving general issues," cautioned V. I. Lenin, "inevitably will 'stumble' on these general issues at every step without realizing it."²

The foundation of military economic knowledge consists of Marxist-Leninist theses on the interconnection of war and economics, on principles of economic support to defense, on characteristic traits of the military economy of a socialist state, and on its fundamental distinctions from the military economics of imperialism.

1. Marx, K., and F. Engels, "Sochineniya" [Works], XX, 171.

2. Lenin, V. I. "Polnoye sobraniye sochineniy" [Complete Collected Works], XV, 368.

Of fundamental importance to resolving specific issues is the thorough understanding of the extraordinarily complex mechanism for strengthening and realizing military-economic potential and ways for increasing the effectiveness of using funds allocated for defense. This book is devoted to an elucidation of these theoretical issues.

The scientific-technical revolution and the rapid development of economics and military affairs are constantly introducing new elements to the resolution of many issues of military economics. It is important to comprehend theoretically the changes occurring and draw necessary conclusions for practical endeavors.

A study of the essential interconnections of economics, politics and war helps to overcome oversimplified impressions and bourgeois pseudoscientific theories on the most vital issue of modern times--that of war and peace. A correct understanding of these issues is of especially great importance under present-day conditions, when international relations are at a crossroads as it were, leading either to increased trust and cooperation or to a renewal of the "cold war" and the arms race.

Chapter IV - Effectiveness of Economic Support to Defense

Intensive management and a shift of emphasis to effectiveness and quality are typical of the developed socialist society. This assumes a more detailed understanding of the essence and mechanism of actions of economic laws; an improvement in management methods; and a rise in workers' activeness in the struggle to fulfill economic plans. This is why increasingly complex tasks are being advanced for economic science in the given phase and economic education is acquiring primary importance.

The issues of increasing effectiveness and quality are of exceptional importance not only in economics, but also in military organizational development. They are specific, require consideration for the features of the defense sphere and, consequently, assume a further development of military-economic science and an improvement in the economic training of military cadres.

1. The Need, Essence and Features of an Economic Approach to Defense Problems

The effectiveness of the use of funds allocated for defense holds one of the leading places among current problems of military economics. This is not a new problem. It was taken up back in very ancient times, and rules for accounting and reporting were set up in the matter of army supply. As military expenditures grew, the effectiveness of their use acquired an ever-increasing social importance. But despite the fact that this problem has been dealt with since ancient times, there is still much that is vague here, beginning with the very concept of effectiveness, which in different historical stages has had a far from identical content.

The effectiveness of military expenditures cannot be viewed abstractly as a standard-normative category. It reflects the class essence of society and its basic economic law. If surplus value is the law of movement of the capitalist method of production, then profit and its amount and norm are necessary components of the concept of effectiveness of economic support for this society's military

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needs. The social content of effectiveness of defense expenditures of the socialist society is determined by the basic economic law of socialism, which subordinates production to fullest satisfaction of needs and comprehensive development of workers. The comprehensive nature of development, the consumption and the activities both of an individual and of society depend on saving time, wrote K. Marx. Marx considered time economy and its planned distribution by production sectors to be the "first economic law" of socialism.¹

Being forced to divert a portion of its personnel and funds for military purposes, the socialist society strives for that use of them in which the goal is achieved in the most economic way. V. I. Lenin stated that "the cause of defending the Soviet Republic insistently demands the greatest economy of personnel and the most productive application of the people's labor."² This task has special significance in the defense sphere because here we are speaking not just about the expenditure and replacement of personnel and resources; the lives of millions of people and the fate of revolutionary achievements depend on the effectiveness of their use.

And so the social essence of the category of effectiveness of using funds intended for military purposes is predetermined by the basic economic law. In a socialist society their most effective use is that which provides for a high degree of national defense with a minimum diversion of personnel and resources for the accomplishment of direct tasks of building communism. The Greeting of the CPSU CC, Presidium of the USSR Supreme Soviet and USSR Council of Ministers to military personnel on occasion of the 60th anniversary of the Soviet Armed Forces emphasizes: "The essence of our military policy is everything for an effective defense, and nothing more than this. The Soviet Union never has armed itself for the sake of armament; never was and never will be an instigator of the arms race."³

The problem of the effective utilization of resources earmarked for defense is a specific one. It combines not only economics but also political and military interests and factors. The end result which must be achieved is by its nature a political result or a military result or both simultaneously. And although it also has an economic content, in that it affects the development of productive forces and the people's welfare in one way or another, it is directly incommensurate with economic expenditures. A military-economic analysis examines these expenditures as the price of the political or military effect obtained. Depending on the nature of the specific task, the unique combination of economic, political and military factors may advance to the foreground and attach decisive importance first to one, then the other. Inasmuch as different tasks are being accomplished at different levels of leadership and in different areas of military organizational development, the approach to their economic evaluation and the role of economic considerations cannot be identical. In one instance the economic factor plays a decisive role, and in another it acquires importance only "with other things being equal."

A number of specific features are determined by the fact that the effect obtained and costs connected therewith are incommensurate in the defense sphere. By virtue of this we have to compare not costs with results directly, but either compare variants in achieving a set goal by costs (minimization of costs) or, based on specific costs, select the most suitable of possible goals (maximization of results). These are the basic kinds of tasks being accomplished in the process of a military-economic analysis.

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The problem of the effectiveness of utilizing resources allocated for defense is a complex one requiring a systems approach, strict subordination according to degree of importance, a certain sequence of resolution, and a precise, coordinated system of criteria which consider the specific nature of tasks being accomplished at different levels of economic support of defense.

Concrete examples of a scientific approach to resolution of complex military-economic problems are characteristic of V. I. Lenin. For example, in discussing the question of a program for repair and construction of naval vessels, he said: "The entire proportion of the ship repair program must be made to conform . . . with the size of the fleet which for political and economic reasons we decide to maintain." Assuming that the sum being requested for these purposes was large, Lenin suggested reducing it to a specific size (seven million rubles) and, based on this amount, "calculate the proportions in which this amount must be designated for particular purposes within the framework of the ship repair program, and then calculate how we could begin right now converting the aforesaid number of our ship repair yards to metal articles needed by the peasants."⁴ This example attests to the precise subordination of problems being resolved according to the degree of their importance, and of the need for a concrete analysis of the economic, political and military aspects of the problem.

The problem of effectiveness has its specific features at every level and in every part of economic support of defense. At the highest level it must be viewed in conformity with the sum total of social needs, interests and relationships and must be evaluated both from the position of social production as a whole as well as that of the armed forces, since the former determines military-economic capacities and resources and the latter determines concrete requirements for military economics. The effectiveness of economic support of defense in this case will appear as the ratio of the state's military might (the result) to the scale of the functioning military economic system (the costs connected with maintaining military might)--VM [military might] to VEM [scale of military economic system]. The meaning of this ratio is simple. If two states have identical military force, then the effectiveness of economic support of defense is higher for the one which achieved this result with the least scale of military economics and the fewest costs.

This ratio can be presented in different forms. If we are speaking not of the status at this very moment, but of states' maximum capabilities, then military potential (VP) must be used in place of VM, and economic potential (EP), economic might (EM) or military-economic potential (VEP) must be used in place of VEM depending on the aspect of the problem. Either the minimization of costs at a given level of military might or maximization of result with given resources can be used as the criterion of effectiveness.

The effectiveness of economic support of defense can be expressed quantitatively by various indicators, which are constructed on the basis of a comparison of results and costs. It is customary to characterize military might using indicators of troop strength, number of combat-ready divisions, and numbers of the basic types of weapons and combat equipment in armies of the belligerent countries. Corresponding data are given in absolute proportions and in relative terms, as of a specific moment and in the dynamics. Data on human resources, the amount of productive capital, production volume of basic kinds of products, the

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gross product and national income are used as indicators of economic potential and of economic and military-economic might. The different forms of comparison of these two groups of indicators are the concrete indicators of effectiveness of economic support of defense. None of them pretends to be universal. Each one describes effectiveness only to a certain degree and highlights only a certain aspect and a separate side of it. For example, the ratio of troop strength to human resources shows the degree of their mobilization⁵ and the ratio of the amount of weapons supplied to troops to economic resources describes the effectiveness of resource utilization for military purposes. A ratio given previously is very indicative: with approximately 3-4 times less steel and 3-3.5 times less coal, the USSR produced twice the combat equipment of Germany during the Great Patriotic War. These data persuasively indicate that the Soviet Union subordinated economic resources for winning victory in the war more fully than did Germany and used them more efficiently.

The effectiveness of economic support of defense is shaped on the basis of the effectiveness with which all component elements of the military economic system and all its parts function. Therefore specific criteria and indicators of effectiveness characterizing the work of each section of the military-economic system and each stage of the military-economic process are of exceptionally great importance for its optimization. Specific criteria are constructed so as to reflect the specific nature of the section being described, and at the same time so as to enter the framework of requirements of general effectiveness criteria. Here a breakdown of the process of economic support of defense may reach the primary part of each structural unit: the enterprise, shop, brigade and work station in the production unit and to the lowest section, service or subunit in the logistical support system. Optimum functioning of the military-economic system assumes the presence of a developed system of mutually related, precisely subordinated criteria of its optimization.

Effectiveness criteria of its primary part--military production--are the next effectiveness criteria of the military-economic system in rank. With respect to the costs of production of military goods, their measurement bears no substantial features or differences at all from the measurement of resources of public production. The result, on the other hand, is very specific--it must be measured not only with an economic yardstick, but with a military one as well. Herein lies the chief difficulty for developing an effectiveness criterion for military production. Based on the purpose of the military-economic system, the result of functioning of military production is determined not only by the amount of manufactured products, but also by what kinds of weapons and combat equipment are produced and how the aggregate combat effect expected from the use of these weapons and equipment is correlated with costs. For example, the Soviet T-34 tank was one of the most effective kinds of weapons in World War II. It is believed that the colossal expenses of the V-2 were not repaid by the effective operation of this kind of weapon, and that fascist Germany's only weapon meeting the demand of maximum effectiveness with minimum expenditure of personnel and resources for its production was the antitank rocket launcher, the Faustpatrone.⁶

Selection of weapon systems assumed exceptionally great importance in the modern scientific-technical revolution. No matter how well and economically organized military production may be, there can be no mention of its high effectiveness or that of the military-economic system as a whole if the weapons being manufactured

are obsolete or do not correspond to the nature of missions assigned the armed forces. That means a comprehensive and scientifically substantiated approach is needed to determining military production programs with consideration of the very latest achievements of military-technical thinking and the demands of modern military art. The development of precise criteria of military production effectiveness is a necessary condition for success in this matter. This is a complex knot in which technical, economic and military problems are intertwined, which require a complex approach and the use of economic-mathematical modeling and modern computer technology.

The problem of effectiveness of the armed forces rear and the entire system of their logistical support is no less specific. The effectiveness of this part of the military-economic system can be defined as the capability of providing troops with weapons, combat equipment and other military goods on a timely basis, in the necessary amounts, with the necessary assortment and with minimum costs. The determination, measurement and quantitative expression of the results of work represent great difficulty. We will touch on two specific problems without going into the special issues in the work of the armed forces rear.

The first problem is what should be considered a result, how it is to be measured and what indicators should be used to express it. Different indicators are being used: the amount of ammunition, fuel, rations and other military goods supplied to the troops and used by them for an entire war, for an operation or for one day in physical indicators (tons, standard railcars, and so on); the amount of food products procured, shipping volume by different kinds of transportation; amount of repairs performed, and so on.

The question of a development of generalizing indicators for the operation of the armed forces rear thus arises above all, but matters are not reduced just to this. In describing the amount of work performed by the rear, all these indicators are insufficiently tied in with results of troop activities. The fact is that logistical support is not a goal in itself, but the means to achieve a goal assigned to the troops. Therefore the most important characteristic of the rear's effectiveness should be considered its conformity to the missions of the armed forces and its direction toward their achievement. If such conformity is absent, an increase in the amount of rear activities may not signify an increase in effectiveness; moreover, it may lead to a drop in effectiveness. As an example let us refer to the evidence of American military economist Eccles, who analyzed the activities of the supply service during World War II and concluded that "the volume of logistical work tends toward an expansion or overstepping of the bounds of any reasonable proportions, which is not subject to control..." He wrote that there were instances where American naval supply units "operated so inefficiently that they not only did not contribute to support of the fleet but, to the contrary, became the chief consumers of supplies coming to it."⁷

It follows from what has been said that the work effectiveness criteria and indicators of the armed forces rear must be linked with the end result of troop activities or else they will not serve for optimization of the logistical support system to the proper extent.

The second problem concerns a determination of the contribution of the armed forces rear toward attainment of the overall result, and an elimination of the distorting effect of external factors on work effectiveness indicators of the

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rear. The fact is that particular features of military production on the one hand and features of troop activities on the other influence the work effectiveness of the rear. High mobility of war production and the capability to adapt rapidly to changing troop requirements permits a decrease in stockpiles of military goods in the lowest parts of the military-economic system and a reduction in costs involving attainment of a specific effect. And to the contrary, if production does not assure the prompt fulfillment of troop requests, this has a negative effect on the work effectiveness of the armed forces rear. Various features of troop operations also have a substantial influence on it: Their disposition (the compact or excessively extended nature of lines of communication affects the volume of logistical work); their fighting proficiency (it has a direct influence on the amount of ammunition, fuel and so on required for performing a combat mission); the operational-tactical and military-economic competency of the command element, and so on.

Both problems lead to the idea of an ever-increasing universalization of military-economic knowledge and the need for it to train highly qualified military cadres. There were instances during the war, recalls Mar SU G. K. Zhukov, when "tens of thousands of tons of ammunition were put out without result. And how many unsubstantiated and unjustified regroupings and different kinds of troop movements were performed during the war! A colossal amount of fuel and other costly material was consumed for all this and, most important, people's efforts were spent without any benefit."⁸ This emphasizes once again the importance of military-economic training not only for military cadres engaged directly in military-economic functions, but also for commanders and political workers. Speaking at the All-Army Conference for Improving Troop Welfare, USSR Minister of Defense Mar SU D. F. Ustinov expressed this idea very clearly. "There is a need to improve the style of all our economic work and achieve its highest effectiveness," he said. "We leaders must be the example in this. Commanders in chief, commanders, political workers and supply service workers are not simply people holding particular posts, but active conductors of party policy in our Armed Forces, including in the sphere of economic organizational development within them."⁹

2. Military Economics as a Science and Its Significance in Training Military Cadres

The preparation of highly qualified cadres of military economists and raising the economic education of all Soviet Army and Navy specialists and all military personnel is a necessary condition for high effectiveness in utilizing funds earmarked for defense. Life suggests that every officer now must be familiar with a broad range of military-economic issues both of a general theoretical and applied nature. He has to know the features of the action of economic laws in the defense sphere and master the fundamentals of military-economic analysis and an approach to daily tasks with economic criteria so as to raise the effectiveness of utilizing funds and physical assets and the effectiveness of all work. This also is of great importance for economic indoctrination of personnel and for increasing their activeness in combat training and conducting a regime of economy.

A well-developed and differentiated system of such education has been created in the country on the basis of resolutions of congresses of the party, which teach that economic education of all cadres and broad toiling masses acquires primary

importance in the present stage of building communism. It is in this system that many millions of toilers of industry and agriculture acquired economic knowledge. In further developing economic education, the party is striving to ensure that it contributes to the maximum to a dissemination of foremost experience of labor organization everywhere and to introduction of the achievements of science and technology in production.¹⁰ All this also relates fully to the economic education of officer cadres and all military personnel.

A study of Marxist-Leninist political economy and other economic sciences comprises the basis of economic education. Economic laws dictate behavioral logic for every Soviet citizen, including military personnel. By arming a person with a knowledge of objective economic laws, political economy permits a correct evaluation of states' military-economic capacities and an understanding of the features of their realization as determined by a given economic and political system. But in order to take account of the demands of economic laws in the military sphere knowledgeably, it is absolutely necessary for a person to have a knowledge of military science as well and of concrete military-economic and special disciplines, and he needs a specific goal orientation for this knowledge. Military-economic theory contributes to this goal orientation. Its study provides the necessary connection between political economy and other economic sciences on the one hand and with military sciences on the other. It activates and integrates this knowledge and permits an understanding of the operating features of economic laws in the defense sphere and mastery of the methodology of an approach to and proper accounting of their requirements in daily military activities. In addition, in training engineer and economic cadres, it is the general theoretical base for specific military-economic disciplines being studied, allows a detailed comprehension of their content and performs a methodological function with respect to them. Let us dwell on the question of the subject and place of the theory of military economics among other sciences.

It was explained in Chapter I that military economics as an objective reality has two aspects: technical-economic and social-economic. The first aspect is studied by military-technical and special sciences, while the second, i.e., social relationships formed in connection with the production, distribution, exchange and consumption of military goods, is studied by the theory of military economics. Having originated on the boundary between economic and military sciences and relying on them as its basis, the theory of military economics makes extensive use of their scientific apparatus. For example, the categories "military-economic potential," "military production" and "military consumption" are derivative from the categories "economic potential," "production" and "consumption" and express interrelationships and phenomena similar to those reflected in the given categories of political economy. The presence of general elements in these phenomena permits use of one and the same categories. At the same time, the specific nature of these phenomena in the sphere of military economics is emphasized by the attribute "military": military production, military consumption and so on. Use of these categories, a clarification of the specific nature of the action of laws uncovered by political economy in the sphere of military economics, reliance on provisions of military sciences, and application of the material of specific economic and military-technical disciplines comprises a necessary condition for developing a truly scientific method and a system of categories, laws and principles of military-economic science.

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The most essential aspects of military-economic relations and the stable cause-and-effect ties of phenomena and processes of military economics find their reflection in objective laws. Penetrating deeper and deeper into the essence of military-economic relations, military economics as a science uncovers the laws and principles internally inherent to them and the mechanism of their action and use.

An increasingly deeper penetration into the essence of military-economic relationships and processes presumes an understanding not only of their qualitative aspects, but of their quantitative definiteness as well. Possibilities of a quantitative expression of particular military-economic processes are predetermined on the one hand by the nature of these processes and their inherent dialectics of quantity and quality and, on the other hand, by the level of science development, i.e., by the degree of understanding of the essence of these processes and by successes of mathematics and computer technology in the matter of their formalization.

The exceptional complexity of the relationships they express and the high degree of abstraction is a feature of economic laws. In describing economic laws, F. Engels wrote that "none of them have any other reality than in an approximation, in a trend, in an average, but not in /direct/ actuality. This occurs in part because their action crisscrosses with the simultaneous action of other laws and in part as a result of their nature as concepts."¹¹ For example, studying the dynamics of the mean profit norm, K. Marx identifies first of all the main interrelationship--the inversely proportionate dependence of the amount of the profit norm on the level of organic construction and turnover time of capital; and secondly, the large number of factors counteracting a reduction in the mean profit norm and which gives its law the nature only of a trend toward reduction.

The features of economic laws generate a skeptical attitude toward their mathematical interpretation in some economists and mathematicians. For example, N. Viner, one of the originators of cybernetics, believed, in emphasizing the complexity and dynamic nature of economic phenomena, that it was "useless and dishonest" to ascribe a special precision to economic values and "deception and an empty waste of time" to apply precise formulas to them.¹²

With respect to the laws of military economics, these features stand out in even greater relief in them, since here we are dealing with secondary, derivative relationships, and a need to consider crisscrossing actions of economic laws, laws of warfare, and military-economic laws and principles. Nevertheless, an ever deeper understanding of the essence of these relationships, clarification of the action mechanism of their inherent laws, and the level of development reached by mathematics and computer technology opened up new opportunities for creating mathematical models of economic, including military-economic, processes. The works of academicians L. V. Kantorovich and V. S. Nemchinov, professors V. V. Novozhilov and A. L. Lur'ye and others made an important contribution to this matter. In recent years the quantitative aspect of military-economic phenomena is attracting more and more attention of military economists.

Based on the general law of war's dependence on economics, military-economic science studies concrete forms of their interaction determined by the given level of economic development and its inherent method of warfare, i.e., it studies above all historically concrete methods of economic support of wars.

By clarifying available economic capabilities and demands of warfare and the content of military-economic relations forming objectively on these bases, it reveals natural ties of military-economic phenomena and processes inherent to a given stage of development. By studying them in close connection with the technical aspect of military economics, it serves as a theoretical basis for comprehending concrete manifestations of these principles in individual sectors of military-economic endeavor (transportation, supply, finances and so on), which are studied by sectorial and special military-economic disciplines. The theory of military economics is linked with these disciplines, relies on their data, generalizes them, and is enriched and developed as a result of the interaction with them.

Concrete methods of economic support of wars are examined in their development. Military economics is linked with economic history and military-historical science and has its own history. What occurs is not a simple accumulation and systematization of knowledge (laws, categories and principles) which reflect processes of the economic support of warfare more and more fully and correctly. In time certain conclusions of military-economic science lose their significance while others are updated and transformed. New fields of science open up and new problems appear simultaneously with this.

/And so military-economic relations in their integrity are the subject of the theory of military economics./ In studying the relationships of production, distribution, exchange and consumption of military goods in their internal unity and conditionality and in their interconnection with the technical aspect of military economics, with all economics and with political and military affairs, military economics as a science clarifies objective laws and principles of economic support of wars in different stages of historical development. Together with other economic, military and special sciences, it is called upon to substantiate scientifically the most effective solutions to contemporary military-economic tasks of defending the socialist homeland and maintaining a constant combat readiness guaranteeing an immediate rebuff to any aggressor.

Military economics is a profoundly class, party science. In its goals, method, class-political character and ideological directions, it is the opposite of various bourgeois military-economic teachings. In serving the selfish interests of the imperialist bourgeoisie, these teachings are reactionary and antiscientific. Serving the high goals of defending socialism and the building of communism, and the cause of peace and progress represents the firm foundation of the genuine scientific and progressive nature of socialist military-economic theory.

The struggle of the two ideologies is especially acute in the military-economic sphere. Bourgeois military economists deal not only in questions of aggressive wars, but also in their justification. In contrast to this, the military-economic science of socialist society exposes all apologies of militarism, reveals the true substance and reactionary nature of imperialism's military economics, and clarifies the need, features and advantages of socialist military economics and ways of realizing them.

In the process of its development, every science develops a method corresponding to its subject and tasks. The development of military economics as a science is linked inseparably with the application of laws and categories of materialistic dialectics to an analysis of the economic support of wars. This permitted

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identifying military-economic relationships from among the sum total of social relationships and clarifying their natural link with the development of economics, politics and warfare, the dialectical unity of which is determined by the development of the economic support of wars. The replacement of periods of slow evolutionary changes with revolutionary leaps marking a replacement of methods of economic support of wars appeared as a result of corresponding natural processes in the development of productive forces, production relationships and the political superstructure. The laws and categories of materialistic dialectics are the basis for understanding specific military-economic principles and categories. The method of military economics is nothing more than concretization of dialectical materialism as applicable to its features and tasks. It is characterized by the broad use of mathematics and electronic computer technology for the purpose of understanding the quantitative relationships of processes being studied as well as for modeling military economics and developing the foundations of military-economic analysis and criteria for selection of optimum solutions. The need for considering a wide range of factors relating not only to strictly military economics, but also to the entire national economy, politics and warfare, and the need for comparing and correlating quite heterogeneous phenomena of economics and warfare reinforce the importance of a universal method--materialistic dialectics--for military-economic science.

Military economics as a science studies a most important field of military organizational development, and this determines its importance for training military cadres and elaborating the most important theoretical and applied problems of economic support of the armed defense of socialist countries. In training commanders, political workers and specialists of various profiles, it is important to arm them with a system of military, economic and special knowledge revealing the complex mechanism of objective laws by which the military organism functions, including military-economic laws. This is what goes to create the foundation on which the high political awareness of military cadres and their desire to work imaginatively and zealously, thus achieving high effectiveness in utilizing resources earmarked for defense, alone can be realized in concrete deeds. A knowledge of military economics is necessary for developing the correct overall view and concrete methods and methodologies of military-economic analysis, which is beginning to receive increasing emphasis in the work of army and navy economic and engineering-technical specialists. The methodological function of military economics is of very great importance in training cadres.

The growing importance of economic education of military cadres is reflected in the programs of military educational institutions and the command training system, in agitprop work and in the military press. This is quite natural, since the task of improving the economic training of officer cadres can be accomplished successfully only on condition of universal attention to it and complete use of available reserves.

No matter how much the training process improves in academies and schools and no matter how much the propaganda of military-economic knowledge is bettered, the officer's independent work will of course remain as before the basic method for increasing his level of economic education. As a rule, independent work introduces a certain goal-orientation, inventiveness and interest in training, since it usually contains an impetus coming from life and day-to-day work and a search for answers to questions posed by practical work.

The most important element in independent work is above all a detailed and imaginative study of the works of Marx, Engels and Lenin and documents of the CPSU and Soviet government. They contain the foundation of success, since works by the founders of Marxism-Leninism have a permanent ideological and methodological importance and their study helps develop a correct approach to contemporary military-economic problems. Marxism-Leninism created an orderly teaching on war and the army, revealed natural interrelationships of war and economics, and clarified the essence, class nature, place and role of military economics. The works of Lenin for the first time provided a scientific analysis of economic principles of imperialistic wars, of the essence of "a capitalistic economy for war" and military-state monopoly capitalism, and of a broad range of military-economic problems of imperialism.

Lenin formed the foundations of Soviet military economics as a science and provided ingenious examples of a practical solution to problems of economic support of the defense of socialism. A study of Lenin's work is a necessary condition for thorough mastery of military-economic science.

It is important in any matter not only to master knowledge, but also to acquire an ability to apply the knowledge obtained. Samples of a capable implementation of theoretical conclusions are provided by the many-sided work of the Communist Party in the field of economic support of national defense. Its basis consists of Leninist ideas on the importance of the state's economic organization, on the unity of the front and rear, on the entire country's conversion to a single military camp during war, on the need for serious and comprehensive preparation for the defense of socialism and others. How did the party apply them in fact and how did it develop them? An answer to these questions is provided by corresponding party and state documents and by the works of L. I. Brezhnev and other party and state leaders. A study of them arms one with knowledge of practical party experience and the method of an imaginative approach to tasks of economic support of a defense of socialism's achievements.

There is very rich material contained in the basic works by collectives of Soviet scientists devoted to the Civil and Great Patriotic wars and in works by Soviet state, party, economic and military workers. They cover specific issues of economic support of our Motherland's defense in various phases of its historic history. They clearly and persuasively show the basic features and advantages of Soviet military economics and expose reactionary teachings of the apologists of imperialism. Works dedicated to contemporary military economics are of special interest.

In refuting bourgeois military-economic teaching on the main, fundamental points, it is impossible not to see or take account of developments on specific military-economic problems in capitalist countries. Take for example the system for evaluating and substantiating decisions in the field of military organizational development, the so-called PPB (planning-programming-budgeting) system. According to foreign specialists, the effectiveness of resource utilization is increased as a result of its application. For example, the U.S. Defense Department used it to establish the irrationality of a large number of systems under development (the B-70 bomber, Skybolt air-launched missile) and rejected them. Conversion to the PPB system facilitated development of a standardization of military products. For example, while there were 78 types of internal combustion engines of $\frac{1}{2}$ -20 hp in the U.S. Armed Forces in World War II, now a total of six

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models have been developed for this range of power and the number of parts for manufacturing engines has been cut tens of times.¹³ There is no doubt that the PPB system facilitates a rationalization of imperialism's war machinery, but in serving the interests of the military-industrial complex it is being used to intensify the arms race. With respect to general theoretical matters, bourgeois scientists capable of providing valuable work in specialized fields cannot be believed one bit when the talk turns to general theory. Lenin directed attention to this repeatedly, emphasizing that the bourgeois "professor-economists are nothing more than learned henchmen of the class of capitalists..."¹⁴

3. Current Issues of Military-Economic Theory and Practice

New capabilities for productive studies both of a general theoretical and basic nature as well as of an applied nature, open up at the boundary of different sciences. Military economics is the junction point in which social and natural sciences, economics, politics and military affairs interlace. There is a broad field for study here and its currency and importance is exceptionally great.

An increase in the role of basic, general theoretical research is a general feature of modern times. The correctness of words to the effect that there is nothing more practical than a good theory is especially understandable under conditions where science more and more is becoming a direct productive force and when the gap between major scientific discoveries and their realization is being reduced sharply. The present practice of financing scientific research and development projects in developed countries, including the USSR, attests to the fact that approximately one-third of appropriations are spent to conduct scientific research and two-thirds for development work. At the same time one notes a certain increase in the share of appropriations for basic research.

Every science has its own general theoretical and applied tasks, and they are present in military economics as well. General theoretical research has acquired special urgency. The fact is that essential changes are occurring in economic support of defense. They are caused, first of all, by the rapid development of productive forces and economic capacities as a result of the scientific-technical revolution; secondly, by revolutionary transformations in means of armed warfare and in military affairs as a whole taking place on this basis; and thirdly, by the dynamic process of opposition of the two world systems--capitalist and socialist. These changes are touching not the individual aspect of economic support of defense, but encompass the entire system of military-economic relationships as a whole and are being improved constantly. Therefore it is necessary to have systematic, complex general theoretical research in the field of military economics which permits delving deeper into the essence of military-economic processes, reflecting them in the form of a strictly subordinated system of laws, categories and principles; to generalize and systematize the knowledge gained in concrete economic and military disciplines; and analyze current military-economic activities. These are necessary conditions for the scientific substantiation and perfection of the state's military policy and of all endeavors in the field of economic support of defense.

As the essence of military-economic processes and their qualitative aspects are clarified, the center of gravity shifts to their quantitative characterization, the conduct of applied military-economic research and development of practical recommendations on the most important tasks and directions of economic support

of defense under present-day conditions. The level reached in development of mathematics and computer technology creates new opportunities for mathematical modeling of military-economic processes, but these opportunities can be realized only on the basis of an extension in the degree of understanding of the essence of military-economic phenomena and their inherent objective laws. Therefore a detailed theoretical elaboration of military-economic categories and laws as a single, thoroughly dissected and strictly subordinated system has become the primary task of the general theory of military economics in the present stage. This is a complex, many-sided task requiring methodological unity and coordination of efforts of different collectives specializing in specific directions of work. There are numerous outputs from it to contemporary practical military-economic activity, since it is inseparably linked with a proper understanding of the essence and main trends in development of military economics and ways of strengthening military-economic potential, with an increase in effectiveness of utilizing funds allocated for defense, and with questions of cadre training.

Those basic directions of economic support of national defenses mentioned in the first chapter draw attention above all among the rather broad range of current military-economic problems. Each of them requires a comprehensive theoretical elaboration on the basis of a complex approach. In addition, there are problems permeating all directions of military-economic endeavor.

/Strengthening of the military-economic potential/ is one of the basic directions of economic support of defense and at the same time one of the fundamental problems of military-economic science. A comprehensive study of the content and structure of military-economic potential and of its interdependence with economic and military might is necessary for a study of the military-economic capabilities of one's own state and of probable enemies, of the existing correlation of forces and of their dynamics; and it is necessary for developing military policy and doctrine. Opportunities are especially broad here and there is an especially insistent need for applying achievements of mathematics and contemporary computer technology. There must be a theoretical elaboration of the methodology and procedures of mathematical modeling of public reproduction. A special complexity is presented by an accounting for the effect of social-economic factors on the dynamics of economic might and military-economic capabilities. Practical studies of the military-economic capabilities of individual states and coalitions must develop on the basis of the solution to theoretical problems of military-economic potential.

/Economic mobilization./ With the appearance of military needs, a differentiation of military and civilian production occurs, specific interrelationships form between them, and the problem of a proper distribution of personnel and resources intended for satisfaction of particular social needs arises. Study of the interrelationships of military and civilian production in each phase of development is a necessary condition for clarifying the limits of economic mobilization, the magnitude of the military-economic potential, optimum ratios of military and civilian production, ways and methods for military reorganization of the economy and a number of other problems which must be solved in order to develop the most common guidelines in the field of economic support of defense. The study of this group of relationships has been given especially great attention since World War I, which required the reorganization and subordination of the entire national economy of warring states to the satisfaction of military needs. Nevertheless,

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these issues are very current even today, since fundamental changes in the method of economic support of defense and warfare which occurred in the postwar period introduced much that was new to the interrelationship of military and civilian production.

One of the features of economic mobilization in the present stage is its /multiple variants/, determined by the possibility of quite varied wars, requirements of which for a military reorganization of the economy differ substantially in content, scale and time. Another feature consists of the sharply increased importance of /mobility of the economic system/. The economic system must adapt rapidly to changing conditions and needs of warfare, caused first of all by the multiple variants of economic mobilization; secondly, by the fact that the scope and composition of military needs in the era of scientific-technical revolution are subject to frequent abrupt changes in peacetime, let alone in wartime; and thirdly, by the fact that the status and conditions for functioning of the national economy also will change often and abruptly in modern warfare as a result of a reinforcement of its maneuverable character and sharply increased capabilities of armed influence on the economic system. This adaptability depends on /preliminary preparation/ for possible reorganizations. Economic-mathematical modeling of corresponding processes and the "gaming" of different variants of economic mobilization as well as variants for restoration of the economic system subjected to armed pressure on the part of the enemy help understand the make-up and character of necessary preparatory measures.

Relationships in the process of /production of military goods/ make up a most important group of military-economic relationships. As has been explained, in the narrow sense of the word military production signifies the production of the end military product going directly to the troops. It plays a decisive part with respect to other phases of the military-economic process--distribution, exchange and consumption. At the same time, military production is the chief structural element of the military-economic system, since the character, quantity and quality of weapons and combat equipment being produced determine the possible scale and character of military consumption, the system of troop supply and activities of the armed forces rear as a connecting link between military production and ultimate military consumption. By virtue of this, studies of relationships in the sphere of military production have a fundamental, key importance in the understanding of relationships and processes occurring in other links of the military-economic system.

/Military production must be examined not only in the narrow sense, but also in the broad sense of the word,/ having in mind the entire system of relationships connected with economic support of defense. In this sense, along with production of the end military product, it also includes production of means of production for military production and production of consumer goods for workers engaged in military production. A broad approach to military production is necessary first of all because it provides a key to solving problems of economic mobilization already mentioned; and secondly, because without such an approach it is impossible to understand the social essence of military production and features of its functioning stemming therefrom. Since military production is based on production in general, features of the historically concrete method of production with its advantages or flaws directly affect it. Advancement of the task of combining achievements of the scientific-technical revolution organically with advantages of developed socialism also is of fundamental importance for the military-economic

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system and its effectiveness. Finally, an examination of military production in the broad sense is necessary in the interests of a systems approach to economic issues of a single military-technical policy, since it cannot be separated from the common front of scientific-technical progress.

/Problems of military distribution and consumption/ and consequently of the organizational development and functioning of the economic organism of the armed forces, hold a special place in the range of military-economic problems. As has been noted, military distribution and consumption in peacetime serve combat training, and in wartime they serve armed warfare. In this sense their study is a subject of military science. At the same time, however, military distribution and consumption are the intermediate and final phases in the process of functioning of the military-economic system, and the economic organism of armed forces is a link within it. That means these problems have an economic content which military-economic science is called upon to reveal. This is necessary for a more effective and economic solution to corresponding problems of military organizational development.

Issues of logistical support rivet the attention of many sciences and many researchers. There are scientific research institutes in western countries engaged in problems of logistical support. For example, an Armed Forces Logistics Management Institute was set up in the United States in 1961. It drew up programs for supply economy and fighting surpluses and for such procurement methods as incentive contracts and fixed-cost contracts. In view of the fact that problems of logistical support are within the sphere of many sciences, their study requires a complex approach and coordination.

The problem of /effective use of funds earmarked for defense/ is a problem which permeates all aspects of military-economic endeavor. This problem is not just one of military-economic science. The highest effectiveness of military economics will be reduced to naught if military leaders, the commanders, have not developed the desire and ability to win victory with fewest losses of people and supplies.

"The problem of economic utilization of human and material resources in a period of war has been and always will be one of the most important,"¹⁵ noted Mar SU G. K. Zhukov in a foreword to N. A. Antipenko's book.

The complexity and multifaceted nature of the problem of effectiveness assumes the need for developing its general methodological principles designed to assure a uniform approach to solving concrete problems of effectiveness in all defense spheres. On the other hand, development of simple, rather precise /particular methods of military-economic analysis easily understood by appropriate specialists is an appropriate condition for achieving high effectiveness of the military-economic system as a whole, of each of its individual parts, and of specific decisions by commanders of all ranks. The work of raising the effectiveness of all kinds of military endeavor and all structural elements of the Armed Forces is being analyzed more and more under conditions of nationwide attention to problems of effectiveness and quality. A comprehensive development of Soviet soldiers' creative activeness, of rationalization and invention, patriotic initiative and socialist competition, and an upswing in economic work among the troops are very effective means for rationalizing the economic organism of the Armed Forces and for increasing the effectiveness of military work.

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/The study of international military-economic relationships/ is one of the current and very difficult complex problems. This problem acquired special acuteness and importance in the postwar period in connection with the formation of two world systems and the rapid development in each of them of integration processes which gripped economics, politics and military affairs--all aspects of state life.

External military-economic relationships in the capitalist world have colossal scope and importance. New forms have appeared as a supplement to the traditional form of these relationships--the arms trade, which saw exceptionally great development in the postwar years: military assistance, military production on the basis of foreign licenses, joint research, development and production of armaments, the creation and development of a military infrastructure on the territory of countries participating in aggressive military blocs, and so on. It is impossible to assess the real scope and basic directions of physical preparation of war by aggressive forces or to understand the actual processes occurring in the military economic system of imperialism without a thorough analysis of all these forms. In solving all military-economic problems at any level one now has to take account of their international aspects. When we speak of military-economic potential, we must examine it in a system of states and in the make-up of a coalition. When we study military production, we can evaluate it correctly only with consideration of the international division of labor. But it is not only problems of production, economic mobilization and vitality of the economy which have an international aspect; but also questions of transportation, communication and troop logistical support are resolved with consideration of the capabilities and interests of a coalition.

A developed system of military-economic relationships also exists in the socialist community of countries, as mentioned earlier. It is fully understandable that a comprehensive study of coalition problems and their consideration in military-economic activity is necessary for realization of the advantages of a world socialist system.

/Generalization of the experience of economic support of wars in defense of socialism/ is one of the important tasks of military-economic science. This experience permits a deeper understanding of the advantages of socialism and the art of their realization. The decisive role of the Communist Party's management activities was displayed in all its greatness during the Civil and Great Patriotic wars. It was thanks to these activities that all sources of strength contained in the socialist social and state system were used fully for victory. The need has matured to create a scientific history of the military-economic system of socialism and illuminate this important aspect of the many-sided process of struggle for establishing socialism. This is a task which goes far beyond the narrowly specialized military-economic framework.

The history of the military economic system from its inception to our days written from a Marxist position would have very great importance along with the creation of the history of socialist military economics. This would be a document of supreme importance. "Historians have estimated that some 15,000 wars have taken place over the last five millennia. Some four billion persons perished in these wars, which approximately equals the entire present population of earth. Capitalism and imperialism brought the most disastrous of them. Lenin saw in victorious socialism for the first time in history the appearance of a physical force capable of opposing war."¹⁶ Now the Soviet Union and other

socialist countries are a reliable bulwark of peace and the center of gravitation of all peaceloving forces.

These are the most urgent problems of military-economic science. They are closely interconnected and interdependent, being successive links in a single process of economic support of defense of the socialist state. Close interaction and precise coordination of the work of collectives engaged in elaborating them is a necessary condition for successful resolution of these problems. The presence of a single theoretical and methodological base is the main coordinating factor here.

FOOTNOTES

1. Cf: K. Marx and F. Engels, "Sochineniya" [Works], Vol 46, Part I, p 117.
2. V. I. Lenin, "Polnoye sobraniye sochineniy" [Complete Collected Works], Vol 37, p 367.
3. PRAVDA, 23 February 1978.
4. Lenin, Vol. 45, pp 312-313.
5. Cf: P. V. Sokolov, "Voyna i lyudskiye resursy" [War and Human Resources], Moscow, 1961, p 51.
6. Cf: "Itogi vtoroy mirovoy voyny" [Results of World War II], collection of articles, Moscow, 1957, p 362.
7. Eccles, H., "Rol' tyla v voyne" [Role of the Rear in War], pp 112-114.
8. Quotation from the book: N. A. Antipenko, "Na glavnom napravlenii" [On the Main Axis], p 17.
9. D. F. Ustinov, "Izbrannyye rech'i i stat'i" [Selected Speeches and Articles], p 411.
10. Cf: L. I. Brezhnev, "Leninskim kursom" [With a Leninist Course], speeches and articles, Vol 5, p 537.
11. Marx and Engels, Vol 39, p 355.
12. N. Viner, "Tvorets i robot" [The Creator and the Robot], Moscow, 1966, p 100.
13. Cf: Yu. S. Solnyshkov, "Ekonomicheskiye faktory i vooruzheniye" [Economic Factors and Armament], Moscow, 1973, p 64.
14. Lenin, Vol 18, p 364.
15. Antipenko, p 17.
16. M. Suslov, "Historical Truth of Lenin's Ideas and Work," KOMMUNIST, No 4, 1980, p 27.

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GROUND FORCES

BOOK EXCERPTS: ORIGIN AND DEVELOPMENT OF SOVIET AIRBORNE TROOPS

Moscow DESANTNIKI ATAKUYUT S NEBA in Russian 1980 (signed to press 19 Aug 80)
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[Annotation, foreword, and text of last chapter "Always in Combat Readiness" from book "Paratroopers Attack From the Sky", by I. I. Lisov and A. F. Korol'chenko, Voenizdat, 65,000 copies, 152 pages]

[Text] This book is dedicated to the glorious Soviet paratroopers. It describes the birth of the airborne troops, the heroism of paratroopers in the Great Patriotic War, and their service and combat training in peacetime.

It is intended for a wide range of readers.

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Foreword

Heavy military transporters fly above the fields and forests in sharp formation. They are escorted by supersonic fighters and fighter-bombers. The airborne armada approaches the drop zone. The signal lights flash on in the airplane; the huge hatches open up, and soon multiple-canopy parachute systems begin lowering equipment to the ground. The crews of the combat assault vehicles touch down beside the latter.

Surveying the actions of the paratroopers, who enter into simulated combat immediately after landing, one can no longer refer to them simply as "winged infantry", as they were affectionately named by the Soviet people during the Great Patriotic War and in the first postwar years. The mighty wings of military transport aviation, the strong armor and powerful engines of the armored troops, powerful annihilatory artillery fire, and high mobility and maneuverability on the battlefield all typify the modern Soviet airborne troops. They are called the air guard today.

The airborne troops are vigilantly guarding the peaceful labor of the Soviet people in a single formation with soldiers of other arms and services of the Soviet Armed Forces. They are honorably performing their duty of protecting the socialist motherland.

Paratroopers have modern combat vehicles, tanks, self-propelled guns, antitank and antiaircraft weapons, motor vehicles, and various engineering equipment at their disposal. All of this equipment can be landed by parachute together with the required personnel, and it can be delivered to the required place by military transport aircraft.

The unique features of a paratrooper's military service require that he be physically fit, strong, and persevering, that he have the ability to get his bearings quickly on the ground, and that he have excellent mastery of the tactics of close combat.

Boldness and fearlessness, heroism and selfless devotion to the motherland, high military proficiency, and firm soldier's friendship distinguish the Guards-paratroopers. Soldiers in blue berets speak of their service in the air guard with affection; they carefully preserve and multiply the glorious combat traditions of their units and subunits, and they always take special pride in saying: "We are paratroopers!"

Always in Combat Readiness

Paratroopers Attack From the Sky

The Great Patriotic War was a harsh test for the airborne troops, as well as for all of the Soviet Armed Forces. They honorably withstood this test, and made a worthy contribution to the victory over the enemy. Paratroopers displayed unexcelled heroism, bravery, and high combat proficiency.

The Great Patriotic War showed that the success of the airborne troops, this young branch of troops of the Soviet Armed Forces, is based on the high combat skill of the units and formations, on presence of new weapons in the troops and the means for delivering them to the rear, and on the high moral-political and psychological qualities of paratroopers.

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Today the airborne troops have risen to a higher level in their development. They are outfitted with modern combat equipment and armament, and they are carried to their drop zones by top-class military transport aircraft that can convey missiles, tanks, self-propelled guns, and various vehicles. Paratroopers possess the latest equipment, and highly sophisticated devices, instruments, and mechanisms.

It is true that the organization, armament, and training of the airborne troops have changed, but their devotion to the Communist Party, their faithfulness to the motherland, and their constant readiness to defend their motherland remain unchanged. Soldiers of the airborne troops have demonstrated this high combat readiness and their moral and fighting qualities many times at major Soviet Army exercises such as, for example, "Dnepr", "Dvina", and "Yug". Let us look at two of them in greater detail.

Soldiers of the armed forces reported their successes in combat and political training to the Communist Party, Soviet government, and the motherland on the eve of the 50th anniversary of Great October. A graphic example of the power and combat skill of the Soviet troops was demonstrated at the "Dnepr" troop maneuvers.

Troops of several military districts participated in the combat activities at the maneuvers. The airborne troops were represented by Guards units and subunits that had earned glory for themselves several times in the Great Patriotic War. The paratroopers have honorably accepted the baton from the veterans of the past war, and they have once again confirmed the glory of their order-bearing Guards units.

The columns of troops flowed hundreds of kilometers like mighty currents of molten steel. Missile carriers and fighter-bombers rushed swiftly in all directions over the Dnieper and Pripyat'.

During the battle for the first line of defense, long-range aviation struck the deep rear of the defenses. And as if taking on the fighter bombers in a duel of proficiency, dozens of heavy helicopters dropped airborne units into the engagement from the air. The helicopter assault units had to help the troops attacking from the front to penetrate into the defenses more quickly. The paratroopers proved by their deeds that no mission is ever impossible to them. In the first day of the offensive the helicopter assault units held their airheads on their own for several hours, until the forward units of the advancing troops joined them.

When on the second day of the maneuvers the advance of "East" in the main sector was halted, the command once again decided to land an even larger tactical assault unit in "West's" rear by helicopter.

The morning was overcast. Low clouds hovered over the forest. It began to rain. Using airborne troops under these conditions seemed impossible. Nevertheless the paratroopers prepared for their mission. And despite the difficult situation, the helicopter pilots raised the winged infantry into the air and landed deep in "West" defenses, exactly where they were supposed to.

The helicopters also ferried self-propelled guns, armored transporters, guns, and mortars.

The subunits quickly prepared for attack. The Guards had to engage in field firing as part of a reinforced battalion. Enemy positions were simulated by practice targets. They were set up on terrain unfamiliar to the participants, and they were well camouflaged. The manner in which the practice targets were set up reflected the enemy's most sophisticated combat resources. And high combat proficiency and artful use of weapons were needed to discover "West's" defense system and win.

Batteries of artillery and rocket launchers supported the parachutists with a powerful fire strike. The fire storm raged above the "enemy" defenses. The practice targets fell as if clipped by a mower. Gun, tank, and combat vehicle mock-ups flew apart into splinters. The avalanche of fire annihilated everything in its path. The paratroopers displayed high gunnery skill, and the ability to hit targets accurately with all forms of infantry weapons: Ninety-eight percent of the targets were struck. An outstanding result!

On 26 September, in the second half of the day, when the events reached their highest pitch, the command of the "East" decided to airlift a Guards airborne formation from airfields in the deep rear and commit it to the engagement. Its mission was to make a surprise invasion into the disposition of "West's" operational reserves, in direct proximity to one of their important control posts, and quickly capture it together with offensive missiles. Moreover the parachutists had to capture a large airfield and support the transfer of combat equipment to it for the purposes of reinforcing the airborne assault.

Airships carrying parachutists of the forward airborne detachment, scouts, and an airborne support group were the first to reach the landing zone. They dropped swiftly to the ground beneath cream-colored and gray parachute canopies, firing their automatic weapons while still in the air to clear out the landing site. Landing, the paratroopers quickly advanced toward their objectives and toward lines that were to block the approach of "enemy" units.

The airborne support group set up its homing radar equipment, designated the offset aiming points, and set up orientation markers for military transport aircraft. Meanwhile fighters provided dependable cover to them from various altitudes.

A column of military transport aircraft appeared over the landing zone after the forward detachment. The huge canopies of the freight parachutes were the first to open in the sky. They carried the armored transporters, self-propelled guns, and antitank weapons carefully to the ground. Some of the combat equipment was dropped by parachute-rocket systems at great speed, and almost without any lateral drift. Bright flashes, like lightning, burst beneath them just before they hit the ground. This was the special braking devices firing, providing a soft landing for the cargo. The weapon crews abandoned their airplane following the equipment.

The fight went on in the sky as well. "East" and "West" fighters fought for air supremacy.

But suddenly airplanes with paratroopers aboard appeared in the sky. Within seconds, the deploying canopies of the parachutes covered up the sky. The parachutists descended smoothly, and soon the entire area of the huge field became white.

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It took just a few minutes for the paratroopers to form up in their approach march formations. Every platoon, company, and battalion swiftly advanced within its sector.

Guards Private Viktor Belyuk led one of the detachments to "battle". When he was asked whether he had commanded the detachment long, he replied:

"I just took command. It seems that our commander drifted off course, and we had no time to waste!"

"Do you know your mission well?"

"Yes, sir! Each of us studied the mission well on terrain models just before taking off. Each of us knows what he must do after landing. We were ordered to destroy an 'enemy' signal post on the western edge of Krivaya Grove. Here it is on the map, and there it is out there"---and Belyuk accurately indicated the reference points and the bearing toward the object of his attack.

Viktor Belyuk is a Komsomol member, an outstanding soldier of combat and political training. He has 11 years of service in the army behind his back, and several dozen parachute jumps. And he is just one of many who landed beyond the Dnieper, ready to perform any mission.

The actions of the paratroopers were distinguished by swiftness, mobility, an offensive spirit, and a desire to engage the "enemy" in combat at all costs, in a situation disadvantageous to him.

"West" threw its reserves--tank units--at the "enemy". The tank crews managed to place one of the airborne units in an extremely difficult situation. But this was only a temporary success. The division commander committed his powerful anti-tank reserve to "combat". He was supported by fighter bombers called up for assistance. This permitted the commander of the airborne assault to break the resistance of the "West".

There was a "battle" going on beside a hill for a major "Western" control post. Battalion commander Major G. Ya. Gordiyenko radioed to the regiment commander that the "enemy" was using tanks in decisive counterattacks. The paratroopers met them with self-propelled guns, antitank guns, and grenade throwers. And on other tank approaches a mobile detachment of engineer-parachutists set up minefields.

Occupying their gun positions, antiaircraft gunners of the airborne assault prepared themselves to repel the airborne "enemy".

Outstanding work by airborne equipment maintenance specialists promoted the success of the mission. They ensured 100-percent deployment of the multiple-canopy parachute systems and firing of the parachute-rocket braking devices, owing to which hundreds of guns, self-propelled guns, and other combat equipment entered into "battle" in time.

The paratroopers displayed boldness, resourcefulness, and initiative, and they performed their missions efficiently.

Summarizing the results of the maneuvers, the newspaper KRASNAYA ZVEZDA wrote: "The strikes made by the paratroopers were imprinted upon my memory. I can confidently say that they snowed the 'enemy' under. Their actions were distinguished not only by great scale but also by originality of intent and execution. This pertains especially to the airborne unit landed in the very heat of 'battle' at the Dnieper, in the tactical defenses of the 'enemy'. 'West's' defenses were quickly broken. This was essentially a confirmation of a new means for crossing water obstacles--aerial crossing."

Another correspondent reported: "The paratroopers are soldiers with unlimited courage and valor. They never become confused, always able to find a way out. Paratroopers have perfect mastery of various weapons, handling them with artistic proficiency. Every warrior of the winged infantry knows how to fight at 1:100 odds."

"During the days of the maneuvers I was able to observe many competent actions not only by individual soldiers and officers but also by entire subunits, formations, and staffs. I became a witness to artful use of combat equipment in the most complex conditions of combat. But perhaps the strongest impression was made by the airborne troops and the transport aircraft pilots. They demonstrated split-second timing in their assault, high proficiency, and the sort of boldness and initiative that compels one to confidently say that they are honorably continuing and multiplying the combat glory of their fathers and older brothers--paratroopers of the Great Patriotic War. The baton of bravery and valor is now held by dependable hands."

And this is in fact so. In a quarter of a century, the Dnieper was fated to become the arena of major events for a second time. In 1943 it was the site of savage battles against fascist German invaders. It was almost in these same days of September, in '43, that the 3d and 5th airborne brigades landed on the right bank of the Dnieper.

And now, almost a quarter of a century later, airborne units and subunits of the Soviet Army of the '60's are landing here. And once again the thunder of cannon fire and the unceasing roar of tanks and airplanes fills the regions adjacent to the Dnieper. The only difference is that in the past the opponents were real, and today they are simulated.

Soldiers who had participated in the Great Patriotic War were within the composition of this airborne landing. A small group of parachutists headed by Vladimir Nizkiy was dropped in the enemy rear right at the locations of the present maneuvers. Withstanding a savage 6-hour attack by the Germans and completing their mission, the paratroopers were able to make their way to the brigade's assembly area. And in the "Dnepr" troop maneuvers, Guards Lieutenant Colonel Vladimir Fedorovich Nizkiy efficiently controlled the subunits of the regiment that captured the "enemy's" missiles.

On these lines, where their fathers had once fought fearlessly, today the sons--worthy successors of the combat traditions of the Soviet Army--executed their missions today. Today they also went into combat. It was training combat, but they acted as if in real combat. Paratrooper Viktor Kuropyatnik served in the same airborne regiment and in the same company as his father Dmitriy Grigor'yevich Kuropyatnik, who received a high government award for his fearlessness in the crossing of the Dnieper in 1943. The son followed the example of his father in the "Dnepr" maneuvers.

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A review of the troops was held following the maneuvers. High-speed vehicles carrying the paratroopers appeared before the reviewing stand. Fighting air units flew over them, squadron by squadron. The fighter pilots seemed to be escorting their comrades-in-arms, the paratroopers.

One of the workers of the "Elektrosila" Plant imeni S. M. Kirov in Leningrad wrote: "On reading about the actions of paratroopers in the 'Dnepr' maneuvers, I was pleased to learn that our army has such fabulous equipment and such well-trained people.

"I delighted in their combat proficiency. Not only the military but also we, the toilers in the plants, factories, kolkhozes, and sovkhoses, take pride in the fact that this is our army, that our labor has contributed to its might. We spare no strength or energy to make our armed forces grow stronger from day to day."

"Vertical envelopment"--Soviet troop commanders once dreamed about this operational troop maneuver. The Soviet Army performed a "vertical envelopment" of the enemy for the first time in the world in the 1930's. Later on this maneuver was performed successfully in the Great Patriotic War during the assault on the Dnieper in 1943. Vertical envelopment has become one of the most important maneuvers, without which not a single modern offensive operation would be possible. This has been graphically demonstrated many times at the largest exercises and maneuvers of the Soviet Army in recent years.

A TASS radio broadcast on 11 March 1970 recalled a message transmitted by the Soviet Information Bureau during the anxious war years: "Following an artillery and air strike, 'Northern' troops went over to the offensive against 'Southern' positions. Enjoying a superiority of forces, they destroyed the forward units of the offenders and are now continuing their movement forward...."

On the morning of 10 March, the "Dvina" troop maneuvers began on Belorussian territory. All branches of troops representing a number of military districts participated in them. The airborne troops were represented in the maneuvers by the Guards Chernigov Red Banner Airborne Division.

The division's personnel accepted this important assignment proudly. Everyone understood that this would be a test not only of the individual, his unit, and the division, but also all airborne troops.

Veterans of the division, who had fought in the Great Patriotic War right where the maneuvers were to take place, also prepared for the exercises. This is probably why the traditions of those long-gone days of combat literally came back to life. As before the decisive offensive in the war years, today, before the maneuvers, veterans of the Chernigov Red Banner division--heroes of the Soviet Union--appealed to all soldiers with an open letter. Here is an excerpt from that letter:

"It is with great joy that we learned that our division will be participating in the 'Dvina' troop maneuvers. These exercises will be conducted on Belorussian soil where members of the same regiments graced the battle pennant with unfading glory in the menacing years of the Great Patriotic War....

"Many hundreds of Guards soldiers received orders and medals for bravery and valor, and 50 of them were awarded the lofty Hero of the Soviet Union title. It was in those days that our unit earned its Red Banner.

"We remember well the burdens and deprivations endured in these battles, and we remember the joy and warmth of the welcome we received from the Belorussian people, liberated from the fascist yoke. This welcome warmed our souls, relieved our tiredness, and inspired us to new acts of heroism.

"You will be acting on the fields and in the forests of Belorussia, in difficult conditions and in a complex situation. Let faithfulness to combat traditions help you surmount these difficulties.... We are certain that you, our comrades-in-arms, will display the courage and steadfastness, initiative and skill, faithfulness and resolve, and organization and discipline that are inherent to paratroopers.

"Be worthy of the combat glory of your fathers and older brothers!

Heroes of the Soviet Union A. V. Kirsanov,
G. I. Gendreus, G. Ye. Chereshev, I. K. Sobko,
and A. A. Demidov

The paratroopers were aware of how serious their mission was and how much responsibility was laid on their shoulders. Experienced paratroopers shared their experience and proficiency with young paratroopers. They prepared together to honorably fulfill their missions. This helped the young soldiers to prepare better for the serious trial; it brought the people even more closely together, and it sharpened their feelings of collective responsibility.

On the eve of the maneuvers, as had happened once long ago before the battle, many soldiers drew up applications for the Komsomol and the party.

Scouts Anatoliy Nikulivich, Aleksandr Makarenko, Viktor Aratamonov, and Igor' Aleksandrov were given their Komsomol cards in the division's museum of combat glory, in which every stand and every display is testimony to the heroism of the regiment. Former battalion commander Hero of the Soviet Union Modest Alekseyevich Alekseyev had this to say to the young scouts:

"My sons! There are difficulties ahead of you. I know what it is to be a scout. And this is why I am pleased that there are now four more Komsomol members among you. Almost all of you here are sons of fighting veterans. Our memory is your memory. Do not forget the past war, and preserve your hatred of our enemies, of which there are many today as well. For you, every exercise is a battle. Hold the weapons of your fathers firmly...."

The airborne troops are organically associated with military transport aviation. The latter is the powerful wings of the paratroopers, without which they can do nothing. This tie, as the Great Patriotic War and numerous troop exercises have shown, must be very strong and clear.

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This tie grew even stronger during the "Dvina" maneuvers. Following concentration of the division's unit in the indicated areas, control posts were deployed at the take-off airfields. At headquarters and at the airfields, one could see the green jackets of the paratroopers side by side with the dark jackets of the pilots. The staff officers made the final arrangements for the airborne landing, specifying the personnel and equipment loading points and the routes by which the airborne subunits were to reach their airships. Platforms bearing heavy airborne equipment were located near the airfields. All of the meticulous joint effort was aimed at achieving clear coordination in the actions of the paratroopers and pilots, so that each paratrooper would know his place when it came time to climb aboard or to load a gun or vehicle, and so as to avoid excessive crowding and unnecessary traffic on the airfield.

The conditions of a parachute drop are rigorous. Usually the landing zones are located close to each other, and the time allowed to drop the personnel and equipment and to assemble it together is very limited; moreover the paratroopers must perform a compact, so-called "closely grouped" jump, as in combat. This is why the airmen and paratroopers work so carefully on the calculations, timetables, and plans for the airborne landing.

At dawn the roar of turbines broke the silence. Supersonic MiG's appeared in the air--the fighter escort and cover.

There is something in the military referred to as "H-hour", the time to begin the attack. To paratroopers, "H-hour" is the moment the parachutists begin jumping in their appointed area, when the first paratrooper leaves the first airplane. A jump is also an attack, except from the air. There was such an "H-hour" in the "Dvina" troop maneuvers as well.

"North's" ground troops went over to the offensive on a broad front in conjunction with the thunder of powerful artillery preparation and air strikes against troops, airfields, and road junctions of the "South".

During the first day the "North" achieved significant successes. But the "battle" did not end with the onset of darkness; it went on into the night as well. On that same night units of the Chernigov division made their way to their take-off airfields. The hour of their airborne attack was drawing nigh.

"North's" frontal commander decided to forestall the advance of "South's" reserves and drop a large operational assault force in their rear. His objective was to keep fresh "Southern" forces from approaching, and thus to promote successful advance of "North's" main troop grouping.

The moment for the long-awaited command permitting the take-off arrived. This command was preceded by the last meetings between the pilots and paratroopers for preflight preparations. The comrades-in-arms exchanged letters of exhortation. Here is what the paratroopers wrote:

Dear comrade airmen!

We, the Guards paratroopers, have been ordered to participate in the "Dvina" troop maneuvers. Faithful to the combat traditions of our valorous armed forces, and adopting high socialist pledges in honor of the 100th anniversary of V. I. Lenin's birth, we have given our word to complete this task with nothing but "good" and "outstanding" grades.

We can successfully perform our mission if you the airmen drop us precisely in the prescribed zone, in organized fashion. We give you our word that we will fulfill our duty to the motherland as is required of Guards paratroopers--with a high grade.

We are certain that you, the majestic falcons of the socialist fatherland, will perform with nothing but a grade of "outstanding" during the jump as well.

In response, each paratrooper received a letter of exhortation with the following content:

This is not the first time that we, the airmen, have had to work together with you as we must today, in a single formation. We always delight in the bravery, efficiency, and proficiency with which you, a paratrooper, leave your ship. But for you, the jump is only the beginning. The most important part--the "battle"--is still ahead. Be bold in "battle", paratrooper!

"Be faithful to the commandments of the great Lenin"--this is the slogan under which you are now flying into the "enemy" rear. We know that in the "battle" you will remain faithful to the glorious traditions of the Soviet Army's airborne troops.

In turn, we assure you that we will get you to the jump point precisely and on time.

We wish you clear skies, paratrooper, a soft landing, and outstanding actions in the troop maneuvers!

The Aircraft Crew

The heavily loaded airships left the airfield one after another. The aerial march into the "enemy" rear began. Experienced pilots, true masters of airborne landings, guided the airplanes. The night prior to a jump is a restless night for paratroopers. Each thinks about his jump, and about the "battle". On such a night, staff officers of the airborne troops check out and study the conditions under which the troops must land, and information on the "enemy" once again. And irrespective of his rank and position, every paratrooper is interested in the weather to be expected at the time of the parachute jump. The meteorologists are anxious--they do not want to make mistakes in their predictions, and let the pilots and paratroopers down.

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Strong gusty winds blew all night. After the rains and the frosts immediately following, the ground had become hard. Snow had thawed from high points, and it barely covered the frozen ground. These were not the easiest landing conditions.

By dawn the winds grew stronger, but when the sun came up they abated.

The Chernigov division took to the air. "Northern" aviation appeared above the landing zone, laying a road for the air transport armadas and clearing the "enemy" airplanes from the skies.

Fighter-bombers struck antiaircraft missile batteries, fire control resources, and "enemy" airfields.

Hundreds of heavy military transporters crossed the front line under fighter escort.

The turbines droned on monotonously. Light from the portholes accented the figures of the paratroopers on the gentle twilight background. The hoods of their camouflage robes were flipped back, and their faces were stern and concentrated.

The jumpmasters ambled slowly between the rows of parachutists, wondering how the young soldiers that were making their first trip into the "enemy" rear were feeling. The airplanes were flying low and in combat formation, and the roughness of the flight was having its effect--some were nauseous and their faces were pale, but there was still far to fly.

It is very important to know how to influence the mood of people at such moments, to relieve the excessive moral-psychological load. Paratrooper officers have full mastery of the complex art of pedagogical influence upon subordinates. And it was not long before the parachutists were smiling in response to witty words, funny pictures, and friendly jabs; they became noticeably more animated, and their spirits improved.

But suddenly something changed in their mood. Their faces grew sterner. They had in their hands a battle leaflet bearing the following in a bold hand: "Flash! Comrades, we are now flying over the place where in winter of '42, 20 Soviet paratroopers under the command of Lieutenant Colonel N. Sagaydachnyy fought off an attack by a German battalion in the course of 1 day. The fascists opened artillery fire against the heroes, and they asked them to surrender, promising to spare their lives, but the paratroopers kept on fighting until almost all of them were dead.... The Germans subjected Communist Sagaydachnyy to atrocious torture, but they never got a word out of him...."

The faces of the lads grew stern. It seemed to them that they were now sitting next to those who jumped from the airplane on that frosty February night in 1942 and landed on Smolensk soil.

The engines of the powerful aircraft roared. The goal, the jump point, was coming closer and closer.

The paratroopers were ready for "combat".

The columns of military transporters approached the several landing zones carrying the parachutist subunits, guns, mortars, antiaircraft systems, self-propelled guns, and armored transporters under fighter cover. A reinforced paratrooper regiment jumped in the central landing zone, the one reserved for the command. There was a group of division staff officers in the lead plane.

The most critical moment was drawing near. Suddenly a siren sounded, and a yellow light appeared on the signal panel: "Prepare to jump!"

Guards Viktor Nedelya, Pavel German, Gennadiy Tseloval'nikov, Valeriy Yakunin, and their comrades stood up at their places and lowered the seats. They were now ready to take a bold step toward the ground, to make a surprise attack on the "enemy".

Fingers clutched rip-cord rings. All faced the tail end of the airplane. Opposite them was the open hatch. All watched the signal panel above the hatch. The tension was extreme. And finally, the green light! The inscription above it shone with clear but expressive insistence: "Jump!"

The winged soldiers stepped into the sky. And a loud "Hurrah!" drowned out the whine of the siren and the roar of the engines. The faces flashed past. Faster, faster! The men were running so close together that it seemed as if they were falling on top of one another. There was no other way: A delay of half a second up here would mean as much as 75-100 meters down there. The closer a comrade is up here, the closer he will be in "combat".

It looked as if the sky was covered by a blanket of snow. And the paratroopers continued to jump out of the heavy airships. The beauty and power of the sight was indescribable!

But the paratroopers had no time to enjoy the beautiful sight. Their altitude was not very great. They had to land well, find their heavy-drop platforms, untie them, make their way to their prescribed places, occupy their gun positions, and make the equipment fully combat ready. It is only after all of this is done that the command to open fire could be given. Moreover they had to fight for each second, so that they could help the attacking airborne infantry with fire in time.

The forward airborne detachment commanded by Captain V. Kurnyshov landed first. The detachment quickly seized the commanding heights and prepared to cover the landing of the division's main forces.

The powerful airships came in wave after wave, delivering more and more paratrooper subunits and combat equipment. The division, many thousands strong, was dropped within 22 minutes.

The heavy-drop platform rolled smoothly to the open hatch. Go! One after another, Guards Senior Sergeant V. Boyarskiy and the soldiers of his crew pushed off from the airplane. They had to land as close as possible to their platform.

There it is! Without losing a moment, Boyarskiy began untying it. The rest of the crew was right behind him. Mortarmen Romashin, Gus'kov, Boltunov, and Fedunovich

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worked efficiently. Within minutes the vehicle took off with its rocket launcher and ammunition. This was the first step toward excellence. Guards Sergeant Boyarskiy's mortarmen did what seemed to be the impossible: Surpassing all time standards by a healthy amount, they reported their readiness to open fire ahead of everyone else. Guards Private A. Sedov established communication quickly. His radio station has never let the mortarmen down yet. He received instructions from the observation post clearly and transmitted them to Guards Senior Sergeant V. Yermolayev, the position chief. Now the time was being reckoned in seconds. It was not long before gunlayer Private Romashin had the gunner's quadrant set up.

In a few more seconds the projectile accurately hit its target.

The self-propelled gun landed 150 meters away. There was no time to lose. Loader Guards Private Prokopenko knew that the vehicle commander was not on the battlefield, and so he assumed command. The last few meters were through deep snow. As soon as he got there he untied the platform. He turned on the engine heating lamp. Prokopenko had an excellent knowledge of the responsibilities of a commander and a mechanic. At this moment driver-mechanic Stennikov joined him. He joined the work of untying the platform with little said. Each second is precious. Finally the last mooring line was cast off. Its engine roaring, the self-propelled gun rode off the platform. Getting his bearings, Prokopenko indicated the course to the driver-mechanic. The self-propelled gun headed toward the indicated antitank line at high speed.

But it was not always this way. Immediately after landing, the paratroopers of one of the subunits had to enter into "combat" with an attacking "enemy" group. Their feet had barely touched the ground when the riflemen, signalmen, mortarmen, and drivers assembled into a tight line. Acting boldly together with the paratroopers, medic Guards Sergeant Aleksey Vasil'yev had just recently become a paratrooper. After medical school, Aleksey studied military affairs. And now the first difficulties of paratrooper service were behind his back. As with all paratroopers, the medic was bold, enduring, and a marksman. Being an outstanding specialist, he is always prepared to render medical aid. He wore a pouch with a red cross next to his assault rifle, and he knew how to use it. After the "enemy" attack was repelled, the battle line fell apart as suddenly as it was formed: Every specialist took his place in the combat formation of his subunit.

While still in the air, group Komsomol organizer Private Leonid Vasil'chikov was able to notice where his recoilless rifle landed. Leonid was the first to get to the gun, he quickly deployed it for combat, and he began moving toward the fire line. But it is difficult for one person to do this. And it was not long before comrades in Vasil'chikov's crew hastened to his aid. Gunner Vasil'chikov fired his weapon accurately in the "battle".

The actions of the paratroopers after they landed were distinguished by great boldness and stubbornness.

In literally just a few minutes the crew of a self-propelled gun commanded by Guards Junior Sergeant Lisov untied the vehicle, quickly got its bearings in the situation, and without waiting for others to approach, attacked a dug-in "enemy" infantry platoon. Disturbing the thick brush beneath it, another vehicle driven by Guards Private Salimov rushed forward in a whirlwind of snow, and gunlayer Private Famutdinov fired the gun while on the move.

Many commanders and privates distinguished themselves in the complex "battle", which required great coolness, endurance, and wisdom of the soldiers. Here are some of their names: battalion commander Guards Major A. Mayorov, company commander Captain V. Alekseyev, and platoon commander Lieutenant N. Pikauskas.

The division had completed its landing and our troops were already working on their mission when an An-22 heavy transporter appeared over the landing zone. By this time the "Antey" had managed to gain popularity not only in the national economy but also in the Soviet Army. Here again it was to demonstrate its power as an assault vehicle in "combat".

In the "Dvina" maneuvers the An-22 was piloted by Pilot 1st Class Colonel B. Stepanov and USSR Distinguished Military Navigator Colonel I. Koshkin.

The airborne assault group aboard the "Antey" consisted of paratrooper groups commanded by senior lieutenants N. Tarabanov and E. Yakub. This assault force was led by an experienced parachutist, USSR Master of Sports Lieutenant Colonel Ya. Rakcheyev.

The airborne subunits justified their outstanding rating.

But the aerial program of the paratroopers did not end with this. The An-22 had barely left the landing zone when five An-2's appeared in sharp formation at a 90° angle to its course. It seemed as if they had not even taken off yet, that they were still on their take-off run--so close this group flew to the ground. In another instant, when the airplanes were in line with the reviewing stand, 50 sports parachutists left the airplane. It was only 25-27 seconds from the moment the first parachutist left the airplane until the last landed.

This group jump was made from a height of 100 meters. This unusual landing force consisted of 27 persons who had made more than 1,000 parachute jumps. Extended-service sergeants B. Prokhorov and G. Basov were credited with 2,630 and 2,800 jumps. Our glorious women paratroopers also participated in this experiment--medics and radio operators Anya Guyvon, Asya Kulishina, Tamara Yakubovskaya, Lyuba Sheregova, and Vera Ivanova. USSR Master of Sports Viya Kriyevina made her thousandth parachute jump on that day.

The leader of the maneuvers declared his gratefulness to all soldiers of the group for their high combat proficiency and courage.

Extended-Service Warrant Officer Aleksandr Dudar' demonstrated exceptional proficiency. While being towed by a cable behind an airplane, he flew 30 meters above the ground and saluted the dignitaries in the reviewing stand smartly, as it says in the manuals. Turning, the airplane made another pass at low altitude, and the moment it was opposite the reviewing stand the warrant officer released himself from the cable, making a beautiful landing just 9 seconds later. He was not more than 75 meters above the ground when he released himself.

This was Aleksandr Dudar''s two thousand five hundred eleventh jump.

Meanwhile a "battle" was proceeding on the ground--units of the Chernigov Airborne Division were successfully performing their immediate mission. The scene was an

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observation post. This is where accuracy of fire is born. A target cannot hide from the keen eyes of the experienced paratrooper-gunners. Rangefinder operator Guards Private Vyacheslav Kolpakov is a young soldier, but he has a firm knowledge of his responsibilities. The distances to the reference point and the target were determined accurately and quickly. Guards Private Viktor Vikhonin has also become a good specialist. He makes competent use of his instrument--an aiming circle, the keen "eyes" of the gunners. Radio operator Guards Junior Sergeant Yuriy Uvarov has also become a true master of the airwaves. And although the terrain was close and the "enemy" had camouflaged himself excellently, not a single target remained unnoticed on the "battlefield".

"Tanks!"

The command came unexpectedly, but it did not catch Junior Sergeant Anatoliy Siverin unawares. A second later his eye was on the sight.

Private Nikolay Ovchinnikov also worked efficiently. The Guards soldier would be capable of replacing the gunlayer at any moment. But is he the only one? Viktor Prygin is a young soldier who has been in the army for only 3 months, but he is also mastering the complex specialty of the gunlayer. The crew is totally interchangeable.

Each paratrooper is competent in an associated specialty. The high combat proficiency of Guards soldiers and a well-chosen and well-equipped gun position afford the paratroopers a possibility for holding on, and for keeping the tanks back.

Every hour spent in the field by the soldiers during the first day after their landing was an hour of high courage and combat proficiency.

The "Southerners", who were unable to destroy the paratroopers on the move, tried to encircle the landing force at all costs, and to cut it off from the approaching main forces of the "North".

And so "North" moved motorized rifle divisions toward the place of "battle", attempting to join with the landing party and create a continuous front.

At this moment the commands of both sides committed their main forces to "battle". The tank divisions advanced toward each other. They traveled under air cover. Modern supersonic airplanes rushed over the "battlefield", over the hundreds of menacing tanks and the thousands of combat vehicles.

A hard tank battle began. Hundreds of "Southern" tanks charged the defenses of the paratroopers. But suddenly, as if out of nowhere, the indestructible defensive wall of the parachutists rose up before them. The paratroopers not only opened intense antitank fire, but they were also able to put their antitank mines, grenades, flame-throwers, and smoke generators to use. In the course of the night, paratrooper reconnaissance and sabotage groups knocked out more than 140 "enemy" tanks. Under the cover of night, the paratroopers made their way to the tanks and drew little parachutes on their vulnerable points.

The exercise leader gave a high score to the actions of the paratroopers in the defensive "battle" and in the following counterattack.

Both the "South" and the "North" displayed high proficiency--the "battle" in which more than a thousand tanks had participated did not leave either of the opposing sides with a decisive advantage.

A solemn review of troops that had participated in the "Dvina" maneuvers was held on 15 March in Minsk. The composite regiment was headed by the commander of the Chernigov Airborne Division. "Of that same division which displayed such excellent combat skills in the maneuvers.... Much may be said about the courage, selflessness, and proficiency of the paratroopers. Their profession requires outstanding physical fitness and high moral and psychological preparedness. The best soldiers of the division have the full share of these qualities"--this is what was written in KRASNAYA ZVEZDA on 17 March 1970. And on 10 April the same newspaper noted the following in its lead article: "Among those who were awarded Lenin Jubilee Honorary Certificates, we naturally find those who performed so well in the 'Dvina' troop maneuvers. Such is the Guards Chernigov Red Banner Airborne Division, the brilliance of which reflects the good airborne training of its personnel."

Great credit for this belongs to masters of airborne affairs such as G. P. Pan'kov, V. M. Pashovkin, V. A. Lyakhov, M. V. Arabin, V. G. Belousov, P. A. Rudenko, N. I. Solov'yev, and many other officers of the divisional and troop airborne service.

Soldiers of the Red Banner Chernigov division also demonstrated excellent airborne training, combat proficiency, and the ability to competently execute complex missions deep in the "enemy" rear in subsequent years as well. They have participated in many exercises in which they made actual airborne assaults in coordination with other branches of troops.

Chernigov soldiers greeted the 50th anniversary of the airborne troops with new successes in military affairs. We can be persuaded of this by attending their field exercises and field firing, and visiting their landing zones. Multiplying the glory of their formation, the paratroopers are trying to constantly improve their combat proficiency.

This is typical not only of the Chernigov division but also of the entire "winged guard". The airborne troops are confidently carrying the baton of military valor. They are constantly ready to land wherever the motherland orders.

The Conquerors of the Heights

Army sportsmen have made a substantial contribution to development of Soviet parachute sports. They were the first to get into sports parachute jumping and to make young people interested in it. It would be sufficient to recall to the reader that most world and USSR records in the prewar years were held by sports parachutists of the air force.

During the war Soviet aviation made a great leap forward in its development. Tremendous growth in the speeds and ceiling of airplanes imposed new, complex tasks upon Soviet parachutists.

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Some of the record-holders of the prewar years were described at the beginning of the book. Now let us continue with a description of sports parachutists of the postwar years.

In 1954 our sports parachutists took part in the second world championship in France, and Ivan Fedchishin became the first Soviet parachutist to be an all-around world champion. After Fedchishin, the exalted title of all-around world champion in parachute sports was won by army sportsmen Petr Ostrovskiy, Vladislav Krest'yannikov, and Nikolay Ushmayev, and DOSAAF sportsmen Yevgeniy Tkachenko and Leonid Yachmenev. Women earning the title included Nadezhda Pryakhina, Lidiya Yeremina, Tat'yana Voynova, Valentina Zakoretskaya, and others.

Who were these first all-around champions among army sportsmen who brought glory to our parachute school?

Petr Ostrovskiy is an officer in the airborne troops, and a trainer of military parachutists. He is a graduate of the Zaporozhets DOSAAF club. A long history of sports lay between his first and three-thousandth jump. Born in the Ukrainian village of Malyy Yablonets, he is the son of a partisan that had been shot by the fascists, and he remembers well that day when he first crossed the threshold of the aeroclub. At that time he was working as a railroad conductor. And he dreamed of becoming a pilot. But Petr did not become a pilot. He joined the aeroclub and became a parachutist while continuing to work and study.

When the time came to serve in the army Petr requested aviation. He had 35 parachute jumps to his credit, and this predetermined his fate in the army. He became a parachute packer, and he continued to improve his jumping, accumulating experience and proficiency.

Petr Ostrovskiy took fifth place in the 1957 best air force parachutist competitions. This was a great victory for the novice sportsman, and it served as a springboard for him to the big leagues. In 1958 he was chosen for the combined USSR team. International competitions were held in Ryazan'. Ostrovskiy took first place. A little while later in that same year he enjoyed a brilliant victory in the fourth world championship of parachute sports in Bratislava. Petr earned the title of all-around world champion in parachute sports.

Then followed one victory after another. In a stubborn fight, the senior sergeant became the all-around champion of the air force, and then of the Soviet Union. This was in 1959. When the next Soviet championships rolled around, once again it was total victory!

Another all-around champion who brought glory to the Soviet parachute school was Vladislav Krest'yannikov.

Champions of the Soviet Union, the union republics, various departments, the armed forces, Moscow, and Leningrad convened in Fergana at the end of November 1973. For the first time in the history of Soviet parachute sports, champion parachutists competed for the Prize imeni International Class USSR Distinguished Master of Sports Lieutenant Vladislav Sergeyevich Krest'yannikov. The name Slava Krest'yannikov or, as the sportsmen called him, the "peasant's son", is familiar to all Soviet and foreign parachutists.

Parachutists heard Krest'yannikov's name for the first time in 1963 at a training rally in Tashkent when he was a junior aviation specialist in the air force and a sergeant. Pavel Andreyevich Storchiyenko, a distinguished trainer of the Soviet Union and formerly a naval pilot and a lieutenant colonel, said that this young parachutist showed great promise.

Excellent developed physically, an outstanding gymnast and acrobat, this naturally communicative lad quickly won the sympathy of all participants of the rally. The country's main parachute trainer was certain that Krest'yannikov would become a good aerial acrobat. And Storchiyenko was not wrong.

In just a year Krest'yannikov performed at a parachute landing field in the FRG. Here the young master of sports achieved good results in both acrobatics and landing accuracy.

This performance, his first abroad, gave him an opportunity to acquaint himself with the proficiency of many top-class parachutists. It was here that he came to sense especially deeply that a sportsman needs more than just good technical training. His moral qualities, endurance, and will to win are important.

In one of his jumps Krest'yannikov suffered defeat, but he did not give up, and he did not weaken. That was the nature of this lad from Tashkent, who was able to keep a hold on himself even after suffering defeat. "It doesn't matter," he said, "winning may not be everything, but I will never be beaten again."

I recall a sunny morning in August 1966 at Leipzig Airport. Our country's state flag rose many times in the award ceremonies of that world championship--our parachutists took home 25 gold medals out of 26. And the most precious among them was the medal of the all-around world champion!

A handsome light-haired lad with an athletic bearing and a determined face stood on the pedestal of honor. His eyes were fixed on the flagpole, at the top of which the proud emblem of the motherland would be waving at any moment.

"The all-around world champion for 1966 is Soviet Union sportsman Vladislav Krest'yannikov...."

There was a moment of silence. A light breeze stirred the light hair of the simple Russian lad, wearing a sports suit with the letters "USSR" on its front, visible from far away. A red flag--the banner of Great October--rose up the flag pole as the anthem of the Soviet Union was played.

Then comrades in his team and other sportsmen ran up to him and began tossing him into the air! It was a long time before Slava was allowed to land.

I can also recall our national championship held in Ryazan' in 1970. At the conclusion of the competition the three winners of the national championship rose into the sky, three officers of the Soviet Army--Soviet Union all-around champion Vladislav Krest'yannikov, best sniper of the competition and precision jump champion Valentin Kudrevatykh, and the country's acrobatics champion Anatoliy Osipov. Vladislav Krest'yannikov became the all-around champion of the Soviet Union for the third time.

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It is extremely rare in the history of parachute sports that a sportsman is able to win the country's all-around championship three times. And an army sportsman was able to do so!

This multiple world record-holder is credited with 35 gold medals for setting records in new parachute sports events and breaking old world records.

Vladislav Krest'yannikov, who represented our country many times in international competitions, jumped excellently day and night, from high and low altitude, onto ground and onto water. He was unexcelled in both precision jumps and acrobatics.

His name has been given to the honorary prize for annual competitions in the Turkistan military district, on the ground and in the sky of the republic which gave him his start in the big leagues.

These competitions have become traditional. They are usually conducted at the end of the sports season, and they provide a way for revealing the strongest sportsmen to be added to the combined air force, Soviet Union, and republic teams, and for conducting experiments and instructor training.

But as with life, sports do not march in place. Each year the requirements grow more complex, the proficiency of parachutists increases, and parachute technology improves. But one thing remains constant--our parachute school invariably holds the lead in the world, and great credit for this belongs to the army sports parachutists. A confirmation of this can be found in the traditional competitions imeni Lieutenant Vladislav Sergeyevich Krest'yannikov.

Valentin Danilovich was known by many sports parachutists and pilots. He was a master of sports; he held several world records, and he was a test parachutist. A tragedy which occurred in the course of his official duties wrested him from the ranks of Soviet aviation equipment testing engineers.

Engineer-Senior Lieutenant Valentin Danilovich lived only 34 years, half of which he devoted to parachute jumping.

Valentin took his first steps in the sky in the Gorn' DOSAAF Aeroclub, and this determined his future profession--an aviation testing engineer. He made more than a thousand parachute jumps, most of them being test jumps. He jumped first, and it is not always easy to be first: The first always walk on unexplored, winding trails so as to make it easier for others.

Jumps from the stratosphere, jumps at night, jumps onto water with the weapons and gear of a paratrooper, tests of various resources for dropping people and military cargo and, finally, catapulting from high-speed airplanes. This is what his work consisted of, and it required courage, valor, and great knowledge and proficiency.

Valentin Danilovich did more than improve jumping and make competent use of rescue equipment. He also did much to make the largest possible number of people aware of this remarkable form of sports, to make them love the sky and parachutes as much as he. Valentin Danilovich was a good aerial still and motion picture photographer. His unique photographs have decorated the covers and pages of many journals. When Ivan Vladimirovich Lukinskiy, a director at the Studio imeni Gor'kiy, encountered

difficulties in the shooting of the movie "Jump at Dawn", he invited Danilov to participate in the aerial photography.

And now about the last chapter of his work--testing catapult chairs. Valentin Ivanovich donned his high-pressure suit and helmet many times. The materials and design of the catapult chair had been tested in a wind tunnel, and automatic catapulting of dummies had been performed. And now came the final phase of the test on the new equipment--catapulting a human being! He knew how anxiously they waited for him on the ground, waited for what he would say on his return.

It was the last few minutes before the launch. He had a packed parachute on. Perhaps it would not even be needed. Then came the moment of concentration of all of an individual's physical, moral, and psychological strengths.

An inscription lit up on the instrument panel: "Get Ready to Jump!". He released the safety on the triggering mechanism with his left hand. Next he pressed a button bearing the inscription: "Ready!". He pressed his head against the back of the chair and his elbows against his body. A lamp turned on--"Ejection!". And instantly he felt as if something very heavy had fallen upon his shoulders, forcing him into the back of the chair. Then the tester was airborne. The chair separated automatically from the fast-flying airplane. The next automatic operation followed--the parachute opened. Meanwhile the airplane continued on its way.

Sky, nothing but blue sky. And in the sky was tester Valentin Danilovich.

Danilovich tested parachute, paratrooper, and rescue equipment, and life-support systems, and he was one of the main engineers testing airplane emergency egress systems. Space suits, special gear, pressurized suits--it is difficult to list all that went through his hands.

Valentin Danilovich was ordered to test a new catapult, the result of great achievements in rescue equipment design. The catapult had to work trouble-free from ground zero to the stratosphere, and from the speed of an airplane on its take-off run to supersonic speed.

Calculations, wind tunnel tests, and work with dummies and a testing stand all indicated that everything was normal, but the final evaluation of the catapult unit had to be made by the tester.

"As an engineer, I never have doubts about what I do. But the risk? What can I say, of course it is there.... It is inherent to our profession. But we the testers would not have it any other way...", said Valentin.

He wanted to be the one who opened the door to the catapult's new life. He wanted it to be reliable for the pilots. And as always, he consciously accepted the risk.

His entire life and all of his works are an example of faithfulness to his profession. He took risks every day. He risked his life in behalf of saving the lives of thousands. He jumped with new parachutes from low and stratospheric altitudes. From airplanes, from helicopters. No instrument can say as much about a jump and a parachute as can man. What sort of accelerations were there? Is the chair controllable in the air? Is the individual's initial posture in the chair

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safe? And in every ejection he remembered each tiny detail, each movement, so that it could all be reported on the ground.

He had a family, and he loved his wife and two daughters very much. But then came the day that was to separate them forever.

But the work did not stop. It had to go on. And others, just as fearless and brave, devoted to their work and loving it, carried it on.

The engines of supersonic airplanes roar once again, and testers sit down in the catapult chairs once again. The signal panel lights up. Catapults are activated. There are moments of terrifying accelerations, moments of counting the seconds. Everything is in order--the new chair can now be used at supersonic speeds as well.

Life goes on. And the memory of Valentin Ivanovich Danilovich will live on. In his 34 years he did a great deal, and future generations of pilots and parachutists will be deeply grateful for what he had done.

Soviet parachutists were the first in the fight for altitude. In September 1945 Colonel Vasiliy Grigor'yevich Romanyuk, a well-known parachute tester and presently a Hero of the Soviet Union and distinguished master of sports, abandoned his airplane at an altitude of 13,108 meters. He flew toward the ground for almost 3 minutes without deploying his parachute. Later in his book "Zametki parashyutista-ispytatelya" [Diary of a Parachute Tester], he wrote: "...I am falling, turning haphazardly, and I extend my arms and legs to the sides, wanting to assume a stable attitude, but...I do not experience the customary resistance. Immediately the thought comes to my head that the absence of resistance is the consequence of the highly rarefied air in the stratosphere....

"It is difficult for me to keep a stable attitude. I note that even at high altitude I am able to control the position of my body, but this requires tremendous strain.

"I cannot see the ground. Fluffy clouds block it from view...it is 8,000 meters from these clouds to the ground. I am once again rolled over on my back....

"I break into the clouds, and there is nothing but boundless whiteness around me. I free-fall in this way for 5,000-6,000 meters. I leave the zone of low air pressure and low temperatures. The oncoming flow of air becomes warm and gentle. This is the very time for me to assume a stable attitude and look at the ground...."

The sports commissars checked the barogram after the airplane landed. Vasiliy Grigor'yevich Romanyuk left his airplane at an altitude of 13,108 meters, having free-fallen 12,141 meters.

In 1947 this outstanding parachute tester's name was once again heard around the world. Under his guidance a group of army sports parachutists--N. Gladkov, A. Koloskov, P. Ishchenko, A. Petkevich, I. Savkin, V. Skrypnik, and P. Storozhenko--jumped from an altitude of 11,200 meters.

Further improvements in aviation technology and new achievements in science afforded parachutists a possibility to penetrate even more deeply into the stratosphere. The official record existing today for free-fall time was set in 1962 by testing officers Yevgeniy Nikolayevich Andreyev and Petr Ivanovich Dolgov. They rose in a stratosphere balloon to an altitude of more than 25,000 meters. Andreyev fell without deploying his parachute for 24,500 meters at an average speed of 90 meters per second. Petr Dolgov left the gondola after him and immediately deployed his parachutes, as was required by the testing program. But his anti-G suit sprung a leak. Dolgov died in the air. The valorous parachutists were awarded the Hero of the Soviet Union title for this record jump.

Achievements in the equipment and methods of parachute jumping, arrived at and generalized through the creative inquiry of the senior generation, and by veterans and pioneers of Soviet parachute science, have become available to young parachutists. They now allow them to master this tremendous experience and knowledge in short time, and help many of our capable sports parachutists become international masters. Soviet parachutists have played a leading role in all world achievements in parachute sports for several decades, and our army sportsmen have made their contribution to this achievement.

In 1965, following meticulous medical selection, a group of girls belonging to the Central Sports Parachute Club began high-altitude training at one of Moscow's suburban airfields under the guidance of an experienced trainer, high-altitude parachutist Ye. N. Andreyeva. The girls prepared to establish new records in stratospheric jumps.

Slow rises to altitude and swift returns to the ground in a pressure chamber, study and preparation of personal and built-in oxygen apparatus, parachutes, and the techniques of making jumps at high altitude and low temperature--all of these items were included in the training of the girls. This program required considerable effort, and much physical and psychological exertion, but not a single parachutist washed out.

On 20 June the future record-holders flew to the Volga, to the launch point. The last preflight instructions and training were provided here, this time aboard an An-12 military transporter. The girls were divided into two groups: Nine of them were to deploy their parachutes immediately after jumping, and nine were to open their parachutes later. Masters of sports sergeants O. Rukosuyeva and A. Kensitskaya and sportswomen 1st rank G. Grudinina and T. Sukhareva were certified for solo day and night jumps.

The jumps were made in difficult meteorological conditions that were, furthermore, unusual in terms of air support. The problem was that the crew had to raise a conventional, series-produced transport airplane to an altitude unusual to it, beyond its official ceiling. Therefore every kilogram counted. The airplane was stripped of everything it would not need in the air.

The first attack on the stratosphere was made on 25 June. Sergeants A. Korovochkina, A. Zalusskaya, G. Grudinina, Ye. Chepelova, N. Pankova, T. Sukhareva, T. Duganova, N. Goldobina, and S. Karo made a daytime jump from an altitude of 11,500 meters, in which they deployed their parachutes immediately.

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The airliner slowly climbs. Girls were wearing fur-lined pressure suits, aviator's boots, protective helmets, and insulated face shields. They were to jump from the airship at an altitude where the temperature is minus 60 degrees. Half of the girls' faces were concealed behind oxygen masks. They began breathing oxygen before take-off, on the ground. This is called "desaturation". It must be continued for about an hour, so as to remove excess nitrogen from the body. Only after this can they climb to a record altitude.

At high altitude, nitrogen, which is a principal contributor to the atmospheric pressure of air, may separate from blood in the form of gas bubbles. And if the appropriate precautions are not taken, these bubbles would cause a pathological state similar to that experienced by divers who are raised quickly to the surface from great depths. A person may die from this. This is why an attempt must be made to remove nitrogen dissolved in blood from the body when climbing to high altitude. When a person breathes pure oxygen, all nitrogen leaves the body in an hour. This is known as desaturation.

The altitude gradually increases. The 11,000 meter mark has been passed. A few hundred meters more. The altimeter reads 11,500. A record figure!

Yevgeniy Andreyev held up a pad with "How do you feel?" written on it for the last time. All of the girls gave an O.K. sign.

The hatch covers opened. The parachutists stood up, quickly approached the threshold, and without hesitation they fell into the blue abyss. The parachute canopies appeared instantly as white clouds in the boundless expanses.

The girls dropped for about 30 minutes. A helicopter appeared about the landing zone. It dropped to the ground here and there, picking up the joyous, excited parachutists. Happy, smiling, with bouquets of wildflowers in their hands, they embrace and kiss one another. They joke, and they laugh. The joy of the girls is understandable. After all, they had just broken world records!

On the night of 26 June another group of nine--sergeants N. Pankova, S. Vlasova, A. Kensitskaya, L. Masich, N. Grishchenkova, O. Rukosuyeva, A. Malysheva, L. Kuleshova, G. Sarygina, and N. Basova--successfully completed a free-fall group jump from an altitude of 12,080 meters, free-falling for 11,280 meters and deploying the parachutes at an altitude of 800 meters.

On this same night the first group of girls, consisting of eight persons (N. Pankova remained aboard the aircraft due to a malfunction in her oxygen supply) made a high-altitude jump in which they deployed their parachutes immediately. They reached an altitude of 12,200 meters.

On the night of 29 June Master of Sports O. Rukosuyeva made a free-fall jump, leaving the airplane at an altitude of 12,500 meters. She fell 11,900 meters without deploying her parachute. Following her, G. Grudinina climbed 50 meters higher and deployed her parachute immediately. Master of Sports Antonina Kensitskaya set a new world free-fall record from an even greater altitude. She jumped from the airplane at 12,834 meters. A young sportswoman named Tat'yana Sukhareva jumped at the same altitude, deploying her parachute immediately. Both girls became world record-holders. In all, the woman parachutists earned 39 gold medals in these June days.

Two months later a group of parachutists belonging to the "Polet" Aviation Sports Club of the Ministry of Aviation Industry took to the skies on a high-altitude challenge under the guidance of testing engineer, Distinguished Master of Sports Aleksandr Petrichenko.

On 21 September Ol'ga Komissarova, a young parachutist, was given a send-off into the air. RFSFR Distinguished Trainer Sergey Kiselev tells the story: "The huge fuselage of the airplane was bubbling with activity--the sportswoman needed assistance in putting on the parachutes, the oxygen supply gear, and two cumbersome barographs. Only two assistants were required, but everyone wanted to say some sort of good parting words, and do whatever they could, no matter how insignificant. Thus practically the entire group of sportsmen--there were 20 of them--were in attendance. Incidentally, however, there was no confusion or disorder. Slava Tomarovich, who was checking out the oxygen apparatus, and Sasha Petrichenko, the group chief and trainer, were bustling about Ol'ga. Everything was in readiness. The last farewells and handshakes, and all of the people left the airplane. Ol'ga remained alone.

"The Tu-104's wheels separated from the concrete. The search group took off for the landing area. Just 45 minutes later pilot Vladimir Kryzhanovskiy reported attainment of the required altitude--14,000 meters. Not a single female parachutist had ever climbed to such an altitude in the world. The air temperature was minus 60 degrees outside. The airplane was flying at about 850 kilometers per hour. Somewhere up there, she was to jump from the airplane at this moment. We were all beside the radio station, silent. A light crackle could be heard in the earphones. Eyes were directed toward the sky. We could see the airplane, a silver toy flashing in the sun. And it is even somehow hard to believe that out there, in the deep blue of the sky, there is a person, a frail girl, who is going to fight a one-on-one duel with the air. By this time she had left the airplane, and the pilot immediately reported this to us. It was futile to search for the tiny human figure in the boundless expanses with the unaided eye.

"Nevertheless we searched for her, our heads raised toward the open sky. But there was nothing to be seen. Time stood still. It seemed as if at least a good 5-7 minutes had already passed, but the stopwatch impassionately read just two. About as much more time passed. Where was she? What happened? It would seem that she should have opened her parachute by now! And although everyone remained silent, everyone had the same thought: 'She should have deployed her parachute by now!'

"And suddenly, 2 or 3 kilometers away from us, close to the ground, hung a little parachute, and a few seconds later a signal flare was ignited near it. Everything was O.K.! The helicopter landed on the flat field, and a minute later we were flying home, showering the record-holder with questions. Thirteen thousand five hundred meters of free-fall--that was Olyga Komissarova's achievement, one greatly surpassing the previous world record."

On the next day nine USSR masters of sports--A. Petrichenko, V. Rayevskiy, B. Nemtsov, V. Galayda, A. Isanin, V. Tomarovich, V. Prokopov, E. Sevast'yanov, and V. Pugachev--made a daytime free-fall jump from an altitude of 14,400 meters. They remained in free fall for 13,900 meters. This was the highest jump ever made without a special pressure suit. But the preparations for this jump took almost half a year. The sportsmen made simulated training jumps in a pressure chamber, and then from an An-12, gradually climbing to record altitude.

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The warm clothing, parachutes, and instruments weigh a total of 40 kilograms. Even on the ground, it is not easy to get around with all of this weight. And at altitude, it is many times more difficult. The extremely low air pressure has an effect. Every movement takes a great deal of effort. Each step requires considerable exertion of muscles and will. It was only after they learned to endure high loads and to do hard physical work at an altitude of 11,000-12,000 meters that plans were made for the record jump. On that day, when the group led by Petrichenko made its jump, the air temperature at an altitude of 14,000 meters was minus 64 degrees.

The girls did not fall behind the boys. On 23 September parachutist Yelena Danilovich, the wife of Senior Lieutenant Valentin Ivanovich Danilovich, a world record-holder and a parachute tester, climbed to an altitude of 14,000 meters. She deployed her parachute immediately on leaving the airplane, and landed 32 minutes later. This new women's daytime record significantly surpassed the previous world records, which were held by our girls as well.

On that same day a group of girls consisting of Master of Sports A. Skopinova and sportswomen 1st rank L. Sokolova, R. Voronkova, L. Soldatova, I. Mikhina, S. Savitskaya, N. Vershinina, O. Komissarova, and Z. Romanova jumped from an altitude of 14,200 meters, free-falling for 13,700 meters.

Girls are setting one record after another. Alla Skopinova made a free-fall night jump from 14,000 meters. This was on 29 September. On that same night Lyudmila Sokolova set a new record for women by jumping with a deployed parachute from that same altitude.

And on 30 September Aleksandr Petrichenko and Valeriy Rayevskiy climbed to the Tu-104's ceiling--14,800 meters. Rayevskiy deployed his parachute just 400 meters from the ground.

Thus in 10 days, from 21 September to 2 October 1965, sportsmen of the "Polet" Aviation Sports Club set 13 world records.

It was 1967. The half-century jubilee of the Country of the Soviets. Sports parachutists of the airborne troops, and all Soviet people, wanted to present their motherland a gift. Prior to this time, there had been world-record jumps of varying difficulty, but no parachutists in the world had ever landed on high mountain slopes. Soviet sportsmen were the first.

On a clear August morning a heavy An-12 transporter appeared above Communism Peak in the Pamirs.

One circle, and then another, and something separated from the airplane and hurled downward. This was a sighting parachute holding up some sort of container.

Another pass--multicolored parachute canopies burst open in the dark-blue sky above the high mountains, to remain suspended there above the eternal snow, crevices, and inaccessible cliffs; 2-3 minutes later six parachutists landed on the Pamir plateau with amazing accuracy. Moscow mountain climbers marched toward the parachutists from below. Mountain masters from the Moscow "Burevestnik" Voluntary Sports

Society helped the parachutists bring in their parachutes, loaded their gear into backpacks, and began their highly difficult return treks. Ahead lay hard, slippery ice with a slope of up to 50 degrees, and cliffs of loose rock that would not retain even a long ice hook. Unaccustomed to walking in the mountains, the parachutists found this difficult. Descending down steep cliffs lined with loose rock was the most dangerous.

By the evening of 15 August all six parachutists had made it safely down to the helicopter landing pad.

This record group jump was preceded by considerable preparations. The aerial sportsmen trained hard and long in order to achieve a closely grouped landing within a limited zone. They also underwent training in mountain climbing. Special parachutes made of denser fabric, with larger than usual canopies, were designed as well.

The parachuting part of the expedition was headed by International Class Distinguished Master of Sports Aleksandr Petrichenko, and the mountain climbing part was under the charge of International Class Distinguished Master of Sports Aleksandr Ovchinnikov. Master of Mountain Climbing Sports Viktor Galkin, a former paratrooper, served as group coordinator.

The group included A. Petrichenko, V. Bessonov, V. Prokopov, E. Sevast'yanov, V. Chuzh, and V. Tomarovich.

On 27 July 1968 36 paratroopers landed on the "roof of the world"--on Pamir, at an elevation of 6,100 meters, to commemorate the 50th anniversary of the Leninist Komsomol. They were followed by 10 aces of parachute sports, who landed on Lenin Peak at an elevation of 7,134 meters! The high-altitude parachute expedition was headed by Aleksandr Aleksandrovich Petrichenko this time as well; he was now an engineer-lieutenant colonel in the airborne troops, and a State Prize laureate.

The Pamir landing was not simply just another record of the parachutists. It was the birth of a new sport. It could perhaps be called mountain parachute jumping or aerial mountain climbing. It is difficult to overstate its significance. Assume an airplane crashes in a mountainous region, or mountain climbers suffer disaster, or geologists must be rescued--climber-parachutists could provide immediate assistance to them.

Army sportsmen set new high-altitude world records in parachute sports in 1977. In October, Master of Sports of the Airborne Troops El'vira Fomicheva made a free-fall jump from the upper layers of the stratosphere, from an altitude of 15,496 meters. She deployed her parachute after falling 14,800 meters.

El'vira Fomicheva was accompanied by another 10 female paratroopers and masters of sports in the airplane: R. Burlaka, V. Bukhtoyarova, N. Vasil'kova, Z. Vakarova, N. Gritsenkova, Ye. Yegorova, N. Pronyushkina, Z. Salmina, L. Fisher, and M. Chernetskaya. This "fabulous ten" left the airplane at an altitude of 14,846 meters and deployed their parachutes at just 600 meters above the ground. This was a new world record for high-altitude group jumps.

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Our parachutists also hold records in group jumps from minimum safe altitudes. On 1 March 1968 50 parachutists of the Central Sports Parachute Club of the airborne troops jumped from their airplane at an altitude of 100 meters! Reserve parachutes are not needed in such jumps, and so those were left on the ground. It was only 13 seconds from leaving the aircraft to landing on the snow-covered airfield. Thirteen seconds of bravery!

This group included nine girls headed by their commander, Master of Sports, Warrant Officer Lyuba Masich. USSR Distinguished Master of Sports, Lieutenant Colonel Vladimir Morozov trained the record-holders and jumped together with them. Later he also took part in the Pamir landing.

We have been talking about high-altitude jumps and jumps from minimum altitude. But there is yet another form of parachute jumping in parachute sports, one which requires not only courage but also exceptionally high accuracy and finesse. I am referring to solo precision jumps. The sportsman jumps from the airplane at an altitude of 1,00 meters, and somewhere below, in a landing circle, he is awaited by a 10-centimeter disc, or, as it is called, a "washer". This is the target on which he must land. And deviations from the center of the "bull's-eye" are measured in centimeters.

On 1 January 1980 the names of two Soviet masters of sports were entered into the table of world records for solo precision jumps: warrant officers of airborne troops Z. Kuritsyna and A. Beloglazov. Zina had hit the "washer" 81 times, and Aleksandr had hit it 106 times!

I would also like to mention the unofficial records that imply the unusual bravery and will of our army sportsmen. International Class Distinguished Master of Sports Anatoliy Osipov jumped from an airplane 1,000 times in 1979! This is the number of parachute jumps made by most masters of parachute sports in 10 years. On the eve of the celebrations of the 62d anniversary of October, Captain Osipov was the first to make his tenthousandth jump. A member of his club, Warrant Officer Yuriy Baranov, was the second to reach the ten thousand mark.

An army sportswoman also holds the world record for the number of jumps among women parachutists: International Class Distinguished Master of Sports Valentina Zakoretskaya. By the end of 1979 she was credited with 7,750 parachute jumps!

On 1 January 1980 the International Aviation Federation entered 38 parachute records into the table of world achievements; of these, 24 were possessed by the USSR. Throughout the entire history of Soviet parachute jumping, our sportsmen set and beat 822 all-union records, 715 of them being world records!

In the difficult struggle of international parachute jumping, sportsmen of the Soviet Union earned the all-around world champion title 13 times (out of 27). And Soviet parachute jumpers have dominated the team records for world championship jumps: Women have taken first places in seven championships and men have taken first in five, taking home more than 260 medals.

These are the results with which the Soviet parachute school greeted its 50th anniversary. And there can be no doubt that Soviet sportsmen, including army sportsmen, will make their contribution to further development of world parachute jumping.

Clear Skies for You, Lieutenants!

In fall of 1941, in a difficult time for all of the Soviet people and their armed forces, the paratrooper school was created out of the Kuybyshev Infantry School. Initially it was very difficult for both the instructors and the students--there were neither a special base, nor the training manuals required, and they had to do everything for themselves. There were not enough parachutes in the school, and it did not possess its own airplanes or balloons.

Jumps were the beginning of that long and hard road of courage which the student, the future officer, had to walk. As now, the young students took their examination, qualifying them for the paratrooper service, in the sky. The first steps showed whether or not they would become commanders of "winged infantry" platoons and companies.

The years passed. Now, veteran paratroopers visiting the Higher Airborne Twice-Awarded Red Banner Command School imeni Leninskiy Komsomol in Ryazan' describe the birth of the school and its first steps in the hard years of the Great Patriotic War to the students. And it is with joyous amazement that they observe the astounding changes that had occurred in the school--so different is the present school from that of the war years.

The airborne school nurtured the combat and international traditions of the schools of the war years--all of the best which the Soviet Army's Guards airborne troops had acquired in their half-century history. Paratroopers participated in the battles of the Great Patriotic War, fighting selflessly on the front and in the enemy rear.

The hard times passed. The countenance of the Soviet Armed Forces, including the airborne troops, has changed beyond recognition. They have transformed into a powerful branch of troops capable of independently executing major operational-tactical missions. The role of the officer-organizer, the combat and political indoctrinator of paratroopers and of the one-man commander, has grown immeasurably.

The city in which the school is located knows and loves the courageous and modest, valorous and even, smart-looking and well-proportioned cadets in their blue berets. By tradition, the Higher Airborne School starts off all military parades and national holidays. People come to get an eyefull of the young men and women. Each summer, at graduation time, many mothers come to collect their daughters for the long road: The "Ryazan' Madonnas" leave for all corners of the country, tying their fate in forever with that of their husband-paratroopers.

Difficult is the development of the officer-paratrooper. The moral and fighting qualities of the cadet--the future officer--are developed and improved in classroom lessons, in the fields, in training camps and training exercises, at airfields and parachute landing sites, at tank driving ranges and firing ranges, in practical work with combat equipment, and at tactical exercises requiring actual jumps. It is at this time that their ideological convictions, their unshakeable confidence in the victory of communism, and their implacable hatred of the enemies of the motherland form.

The collective labors persistently to fulfill the task of training the officers, posed by the party and government. Commanders and instructors gain their support for successful completion of this task from party and Komsomol organizations.

In 1935, at the moment a group of outstanding masters was being presented government awards, Mikhail Ivanovich Kalinin said: "You yourselves understand that it is one thing to become a parachutist performing in one's own country, and it is an entirely different thing to be a parachutist who must operate in foreign territory. It is one thing to jump from an airplane in your own country, where you are greeted with applause and where the popular masses receive you with delight, and it is another thing to descend onto foreign soil.

"Under these conditions the ability to get one's bearings and to make the best decision has the greatest significance. This is why our comrades must do everything they can to develop these capabilities."

The school's graduates continue to develop and multiply the glorious combat traditions of wartime years in peacetime. The school has produced distinguished USSR masters of parachute sports, and testers of aviation and parachute equipment--Heroes of the Soviet Union Petr Dolgov and Yevgeniy Andreyev. Nikolay Kharlamov was awarded the lofty title of Hero of the Soviet Union for bravery and valor displayed in postwar years.

Colonel Petr Ivanovich Dolgov, a State Prize laureate who died during a stratospheric test jump with a parachute, has had his name perpetually inscribed in the rolls of the school's 1st Company. Igor' Dolgov, a graduate of the airborne school, is continuing on the road traveled by his father in the Great Patriotic War and in peacetime. The sons of Colonel Aleksandr Ivanovich Solnyshkin also chose their father's road. They successfully graduated from the school, and they are now serving in the airborne troops.

An entire cohort of masters of airborne affairs, known throughout the country, grew up in the first postwar years--Mikhail Arabin, Vasiliy Lyakhov, Nikolay Solov'yev, Georgiy Sergeyev, Leonid Oparichev, Savva Shagalov, Vladimir Poshovkin, Boris Simonkov, and others. Their sons also became officer-paratroopers. There are many such paratrooper dynasties in our troops.

Only people with a great force of will who are physically strong and who possess high moral and fighting qualities can become paratroopers. All of their army service proceeds beneath the canopy of the parachute, irrespective of age and rank. The officer-paratrooper and his men boldly and confidently stride over to the open hatch of an airplane, they are excellent marksmen and combat vehicle drivers, and they are experts in all forms of hand-to-hand combat. They never compel their subordinates to do what they cannot do in exemplary fashion themselves. "Do as I do, and do better than me!" is the law of the commanders and indoctrinators of the winged Guard.

Paratroopers are politically competent, ideologically persuaded soldiers wholly devoted to their socialist fatherland and to the great cause of communism. This is why disciplines such as scientific communism, the history of the CPSU, philosophy, and political economics are the main ones taught in the school. Students deeply study the decisions of the party and government, and current politics.

The level of modern equipment requires that officers possess deep special knowledge and high engineering training. Today's cadet is a future commander, one who has perfect mastery of combat and airborne equipment, and one who is able to drive tanks, self-propelled guns, and various vehicles.

The entire training process nurtures high moral and fighting qualities in the cadets. Special training of parachute jumpers--airborne training--rightfully holds the leading place. The cadets take joy in learning the art of parachute jumping, which develops their boldness and valor, their courage and self-control, their coolness and resoluteness, and their firm will and decisiveness. Moreover they study an entire complex of complex airborne and airlift equipment, responsible for ferrying all forms of modern equipment into the enemy rear.

The school possesses a good training material base, outstanding classrooms, and well-equipped airborne training complexes for lessons in paratrooper training. The students have access to a rich library.

Much attention is devoted in the school to parachute sports.

Graduates of the school--people with enviable courage who broke many records and earned championships in the world, the country, and the armed forces, have made a substantial contribution to development of parachute sports in the airborne troops. They include Yuriy Belenko, Yevgeniy Babkin, Vladimir Volkov, Valentin Kudrevatykh, Vladimir Bessonov, Vyacheslav Krylov, Boris Korobko, Vladimir Morozov, Robert Silin, Boris Prokhorov, Petr Ostrovskiy, and many others.

It would be difficult to list all graduates who had brought fame to their school and to the airborne troops, but each of them, having undergone a hard school of courage, is worthy of the greatest praise.

Every paratrooper is a marksman. The school has a good training material base in fire training. Classrooms providing instruction in infantry weapons materiel, special arms, and firing theory, and the automated and electrified shooting galleries and firing ranges are well equipped.

Much attention is devoted in the school to the physical fitness of the cadets. They have at their disposal a gymnasium and swimming pool, weight training camps and confidence courses, a water training station, and the broad expanses of Ryazan' fields and forests. They train, they harden themselves, and they strengthen their muscles! The school has taken first place in mass sports many times in competition with armed forces military training institutions.

The paratrooper's song is beautiful and enthusiastic. Each year on 9 May, a holiday of songs is held in Ryazan'. This unique sing-off is opened by the paratrooper cadets. Perfect ranks, a crisp, bold step, and youthful bearing distinguish the paratrooper-cadets. They hold prizewinning places in singing on the march among other schools and military units!

The ability of the officer-paratrooper to act confidently on the battlefield has many components. This ability is acquired through tactical training.

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The cadets use miniature practice ranges and terrain models to gain their initial habits of organizing their combat activities and controlling subunits in combat. But the military proficiency of the officer is based mainly on field training. It is mainly in the field, in conditions made as similar as possible to those of combat, that the future commander's tactical thinking matures; it is precisely here that the abilities and habits required of a commander are developed, and that the most important principle of training--"teaching soldiers to do that which they would need in war"--is implemented.

Capitalizing competently on the terrain and on engineering obstacles, making wise use of antitank resources, and displaying boldness, valor, and resourcefulness, the cadets master the tactics and art of fighting tanks in battle in a special camp.

Tactical maturity, physical endurance, and the abilities and habits acquired in lessons are tested and improved at tactical exercises involving parachute jumps.

Military parachutists demonstrate their high combat proficiency in exercises and in aerial parades. These functions are attended by hundreds of officers, graduates of the Higher Airborne School, ones who have earned government awards for excellence in military labor.

The party and government have given a high evaluation to the school's efforts to train "winged commanders".

It was awarded its second Order of the Red Banner on the 50th anniversary of the Soviet Army and Navy. In fall 1968, in response to a petition from the command of the airborne troops, it was awarded an honorary title--imeni Leninskiy Komsomol.

The training of cadets at the school is thorough. Intense combat training is competently combined with sensible relaxation. Group attendance of theaters and the movies, athletic competitions, meetings with interesting people, and amateur nights filled with enthusiastic singing, nimble dancing, and happy army jokes are far from a complete list of the forms of recreation provided to the school's students.

Firm friendship binds the cadets with Komsomol members of many cities and oblasts. Thus for example, the SMENA, Smolenskaya Oblast's newspaper, was the initiator of a march of Red scouts--junior paratroopers--to the places of combat glory of airborne troops. The editor's office of the newspaper appealed to secondary school students with the following letter: "Dear young student! It will not be long before the parting bell will sound in your school, and the long-awaited certificates of maturity will be in your hands. Childhood will be behind you. A long and beautiful road of life will await you. It is to you that this letter from the 'Search' staff of the editor's office of the oblast youth newspaper SMENA is addressed, to you who are to begin this great and glorious life, who are standing on its threshold.

"As with every Soviet youth, you naturally dream of difficult and heroic deeds, and you are attracted by romantic and courageous professions. You are acquainted with the names of heroes, many of whom you strive to imitate, in the hope of becoming the continuers of their causes. You, the romanticists and dreamers who love your people and your Soviet motherland deeply, have many thousands of roads open to you for valor, for heroism, and for glory. One of the most romantic, courageous, and noble professions is, without a doubt, that of the Soviet officer-paratrooper.

"You know a great deal about this profession from our newspaper. You know about the unprecedented heroism of soldiers of the IV Airborne Corps, which destroyed fascist garrisons in the territory of Smolensk, in the enemy rear in winter 1942. In summer of the past year detachments from eight of the oblast's secondary schools toured, under the escort of military paratroopers, the battle sites of the IV Airborne Corps, places which added many famous faces to the list of its acts of heroism. Ones about which you had read in the newspaper SMENA.

"You also know a great deal about the modern paratroopers. Firm, unbreakable friendship now binds paratroopers with the population of Smolenskaya Oblast. They are frequent and welcome guests of Smolensk soil. And as it has always been between real friends, they say to the people of Smolensk: 'Please join us, the airborne troops! We await you--patriots, romanticists, seasoned and courageous people!'

"Today an entire subunit of Smolensk residents are training to become officer-paratroopers at the Ryazan' Higher Airborne Command Twice-Awarded Red Banner School imeni Leninskiy Komsomol. They are being trained by officer-paratroopers who are rightfully the pride of all Soviet people.

"A new class will soon be entering this remarkable school. And of course, the residents of Smolenskaya Oblast await them with impatience. And they await you.

"It is not easy to gain the honor of becoming a school cadet. One must finish school with good grades, be a bold and seasoned individual, and have unlimited love for the motherland. Dear friend! If you wish to do bold, heroic deeds, if you are a romantic and want to dedicate your life to service beneath a parachute canopy, you can be recommended by the Komsomol for the Ryazan' school, where you will be able to master the heroic profession of officer-paratrooper, so necessary to our country."

The years pass quickly in the school. The words of the solemn oath of faithfulness to the motherland, given before the Battle Pennant are still fresh in the memory, but the time of solemn parting is already near.

It is with great agitation that the young officers part with the Battle Pennant beneath which they underwent their years of training, having traveled the difficult road of a cadet, full of bravery and romanticism. Now they are officer-paratroopers. We wish you clear skies, lieutenants!

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Years have passed, but the terrible days of war are not to be forgotten. Local residents and young soldiers visit the monuments and obelisks erected at places of battle, and the graves of their brothers. They are visited also by participants of the battles, their heads grayed by the years. The veterans will always remember their comrades-in-arms, with whom they marched to the death, and tasted both the joy of victory and the bitterness of defeat.

The names of other soldiers who had died in battles for the motherland are becoming known to us as well. Many Soviet people are conducting fruitful research. By will of conscience, and by an attraction of the heart, they take on this honorable and difficult work. It is the duty, the sacred obligation of all who remain alive to immortalize the names and deeds of fallen warriors.

It is a great credit that the names of many formerly unknown heroic paratroopers have now become known, and this credit belongs to the veterans of the Great Patriotic War. Frequently, a former veteran would spend his leaves traveling the combat road of his regiment together with his children or grandsons, speaking before young people and local residents. Veterans devote much effort and attention to military-patriotic indoctrination of the Soviet youth.

War veterans are united by the difficult war years. Their frontal brotherhood was tested and strengthened by military labor, by the bitter loss of comrades, and by their great love for their motherland.

Can we possibly forget those who shared their last rations and who marched with us into enemy fire?

Meetings with veterans helped to revive the memories of the difficult roads of war, the battles, and the comrades. Such meetings are being held in many cities of our country. As an example veterans of the Svir' Red Banner Airborne Division of the XXXVII Guards Corps meet in Moscow and in Moscow suburbs where the airborne brigades had formed up and left for the front.

One of the meetings was held in Ul'yanovsk, at the Lenin Memorial Great Hall. It began with the showing of the documentary film "Our Regiment".

This film chronicle returned them to a time more than 30 years ago. And the viewers were astounded by the continual heroism of the Soviet soldiers.

Guard paratroopers were always ready for heroism. Bleeding, they would not leave their machineguns; they blocked enemy firing slits with their bodies; they laid down beneath tanks with their last grenades, and they threw themselves into icy water under enemy fire. So it was in Karelia, at Balaton, and in the Austrian Alps.

Andrey Alekseyevich Yevdan, the regiment's former deputy commander and presently a retired major general, spoke at the meeting. He is not a poet, but he expressed his agitation and his joy in the meeting with these poetic lines:

My graying peers,
We are firmly bound by fate.
The number of your advancing years
Are revealed by your cautious gait.

At Svir' beneath a layer of dust
I see your footprints from the war...
Forget you not that which we were,
Forget you not that which we are!

Vladimir Vasil'yevich Kuz'min, the graying former commander of a machinegun company in 1st Battalion, was sitting next to Boris Nikolayevich Kozlovskiy, a former machinegunner.

"Do you see that lieutenant?" Vladimir Vasil'yevich said. "The second to the right of the pennant? That's my son! He graduated from the airborne school. He is now commander of a parachute platoon."

Hero of the Soviet Union Ivan Kirillovich Pan'kov also came to the meeting together with his son.

"Let me introduce you to Vsevolod Ivanovich Pan'kov, deputy commander for political affairs in an outstanding company. He graduated from the Higher Border Military-Political School, but he has asked to serve in his father's regiment."

The meeting with the past brought back memories of what had been. Someone recalled the paratrooper's song written by the poet Konstantin Yakovlevich Vanshenkin, also a paratrooper in the past:

Boys of seventeen,
Looking death in the eye,
Scouts and riflemen.
I hear their voices.

The young lads went out on their missions,
Never to be seen again....
So passed our early youth
In the airborne troops....

Today's paratroopers are entering new pages of bravery and combat proficiency into the chronicle of our troops. Standing shoulder to shoulder with soldiers of other branches of troops, they are in the same formation with the defenders of our socialist motherland.

Together with all Soviet soldiers, the paratroopers are performing their sacred duty to the people, stubbornly mastering combat proficiency and undergoing paratrooper training. Surrounded by the attention and concern of the Communist Party and the people, they are untiringly striving for more and more successes, raising their combat readiness, and honorably fulfilling their missions.

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